

SHEKAR ENGINEERING, PLC

PO Box 3625, Des Moines, IA 50322 - Phone: 515-334-5062, FAX: 515-334-5052

AWD-100

77-SDP-24-86
m/r

November 15, 2006

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Doc # 32992

Mr. Marlo Gillotti
President - The Gillotti Companies
5600 Enterprise Drive
Grimes, IA 50111

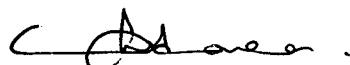
RE: Concrete Supply Construction Rubble Site
1108 SE 30th Street, Des Moines, Iowa.
Landfill Permit #77-SDP-86P.

Dear Mr. Gillotti:

Enclosed please find 2006 annual site monitoring report for the referenced site. The Iowa Department of Natural Resources approved Hydrologic Monitoring System Plan (HMS) requires submittal of annual monitoring reports. I have submitted a copy of the annual monitoring report to Mr. Jeff Simmons of the IDNR.

Should you have any questions or need additional information, please feel free to call Mr. Chandra Shekar at 515-334-5062.

Sincerely,



Mr. Chandra Shekar, P.E.
Iowa P.E. Registration #13663

59860 11/17/06 PM 4:04

✓cc:

Mr. Jeff Simmons
IDNR Energy & Waste Management Bureau
Wallace State Office Building
Des Moines, IA 50319

ANNUAL LANDFILL MONITORING REPORT (2006)

**CONCRETE SUPPLY AND CONSTRUCTION RUBBLE SITE
1108 SE 30TH STREET
DES MOINES, IA**

IDNR PERMIT NUMBER: 77-SDP-24-86P

SUBMITTED TO

**The Gillotti Companies
5600 Enterprise Drive
Grimes, IA 50111**

and

Solid Waste Section of the IDNR

PREPARED BY

**SHEKAR ENGINEERING, PLC
PO BOX 3625
DES MOINES, IA 50322
Phone: 515-334-5062, FAX: 515-334-5052**

Project Engineer: Mr. Chandra Shekar, P.E.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Iowa.

Signature:



Name:

Mr. Chandra Shekar, P.E.

Date:

11/29/2006

Registration No.:

13663

Expiration Date:

12/1/2007



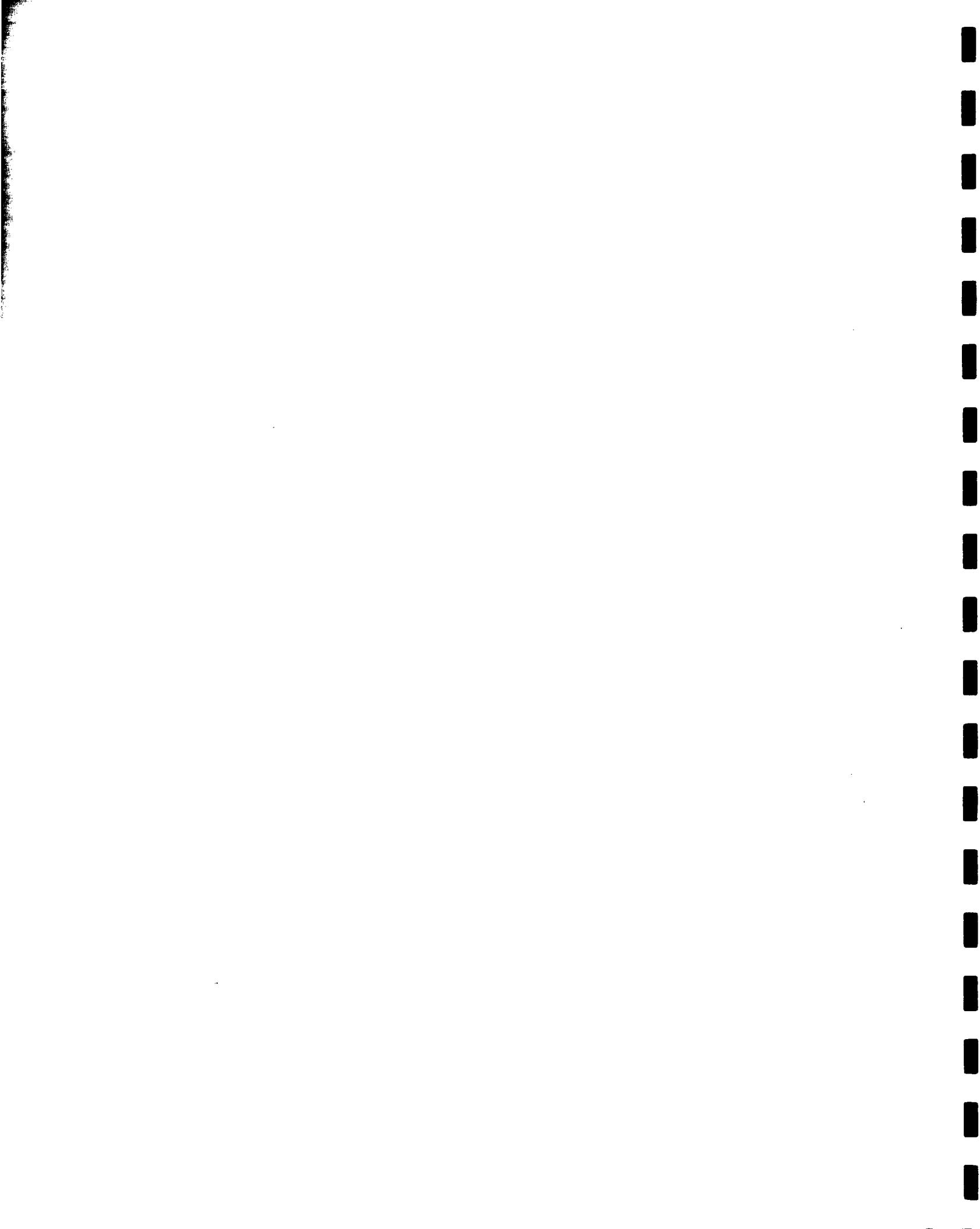


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SITE MONITORING ANNUAL REPORT - 2006

Concrete Supply Construction Rubble Site

(Landfill Permit #77-SDP-86P)

1108 SE 30th Street, Des Moines, Iowa 50137.

1.0 Introduction:

Shekar Engineering (SE) has prepared this annual report for the Concrete Supply and Construction Rubble Site in Des Moines, Iowa. The report is based upon semi-annual and annual groundwater sampling of the on-site monitoring wells and a surface water body.

2.0 Background Information

The Concrete Supply and Construction Rubble Site in Des Moines, Iowa, which used to be a construction and demolition (C & D) Landfill was closed in 1989. At present, the site does not accept any regulated material. However, to fill the low-lying areas of the site, clean dirt and broken concrete are accepted.

Geological units encountered during drilling generally consisted of approximately 5 to 23 feet of fill underlain by approximately 40 to 60 feet of well graded sands with gravels overlying gray and dark gray shales. The shales encountered at the site appear to be consistent with the regional Pennsylvanian-age, Cherokee Group shales. Groundwater is at approximately 20 to 25 feet below ground surface. Groundwater flow direction across the site is towards south.

A Hydrologic Monitoring System Plan (HMS) was approved (6/19/96) by the Iowa Department of Natural Resource (IDNR) and required quarterly site monitoring for the first year and semi annual site monitoring for the second year and so on. Landfill Closure Permit was approved in January 2000.

As part of the monitoring, groundwater and surface water samples were collected and analyzed for Iowa Landfill Parameter e during semi-annual monitoring events (April), and for e and f during the annual monitoring event (October). The analytical results of the groundwater and surface water samples are tabulated in Tables 1 thorough 10.

3.0 Monitoring Well Maintenance and Performance Evaluation

SE evaluated water levels in the monitoring wells using the data obtained during the current annual sampling event and previous sampling events. This evaluation indicates that depth to water in monitoring wells is consistent.

Measurements taken between 1997 and 2003 indicate that all wells are intact and capable of measuring the required parameters. A Table showing the monitoring well location and the respective aquifers is indicated below.

Monitoring Well Locations and the Respective Aquifers

Upgradient Wells	MW-92-1, MW-92-2, MW-92-1R
Downgradient Wells	MW-92-4, MW-92-5, MW-92-6, MW-92-7
Crossgradient Well	MW-92-3
Upper Aquifer Wells (Monitoring wells are at shallow depth)	MW-92-1, MW-92-1R, MW-92-3, MW-92-4, MW-92-6
Lower Aquifer Wells (Monitoring wells that are deep)**	MW-92-2, MW-92-5, MW-92-7

**Note: Lower Aquifer Wells (MW-92-2 and MW-92-7 were drilled a few feet in to shale layer (bedrock); and MW-92-5 was drilled 13 feet in to the bedrock. The 13 feet borehole (in bedrock) was plugged using bentonite. The screened intervals of these wells (MW-92-2, MW-92-5, & MW-92-7) do not extend in the bedrock.)

The IDNR letter dated January 4, 2000 required installation of an upgradient well to monitor for Trichloroethylene. A monitoring well (MW-92-1R) was installed to the south of MW-92-1 in March of 2000.

4.0 Groundwater Table Contour

Groundwater table contour maps (Appendix – 2) were developed using the static groundwater levels (SWLs) recorded in April and October of 2006. The groundwater flow direction in the vicinity of the site is towards south. A review of the SWLs does not indicate groundwater mounding at the site. Static groundwater levels are tabulated below.

Monitoring Well	Top of Casing Elevation	SWLs on 4/27/06	SWLs on 10/19/06	Comments
MW-92-1	796.82	777.50	776.87	Upgradient shallow well
MW-92-2	797.47	777.47	776.82	Upgradient deep well
MW-92-1R	789.92	777.42	776.51	Upgradient shallow well
MW-92-3	797.70	777.04	775.62	Crossgradient shallow well
MW-92-4	799.09	776.88	775.51	Downgradient shallow well
MW-92-5	799.52	776.82	775.28	Downgradient deep well
MW-92-6	801.38	776.76	775.25	Downgradient shallow well
MW-92-7	801.50	776.75	775.20	Downgradient deep well
L-1	799.80	Dry	Dry	Leachate piezometer
L-2	806.15	Dry	Dry	Leachate piezometer

5.0 Methods of Statistical Analysis

SE personnel collected groundwater samples from 8 monitoring wells (MW-92-1, through MW-92-7, and MW-92-1R) and a surface water body (SW-1). The samples were collected according to the protocols set forth in the HMSP and sent to a certified laboratory for analysis of the proper parameters.

Keystone Laboratories of Newton, Iowa conducted the laboratory analyses of groundwater and surface water samples. After receiving the results of the laboratory analyses, SE personnel conducted statistical analysis on the groundwater monitoring data to evaluate the impact of the landfill on the groundwater quality. The mean and standard deviation of each parameter for upgradient monitoring points were calculated as required in Subrule 567-103.2 (6) of the IAC.

After entering the laboratory results and field measurements into a spreadsheet, the following formula was used to calculate the standard deviation:

$$s = \left(\sum \frac{(x - M)^2}{n - 1} \right)^{1/2}$$

Where:

s = sample standard deviation
x = individual data
M = sample mean
n = number of data points in set

The downgradient control limits were calculated separately for the upper and lower aquifers. The results of the statistical evaluation are indicated in Tables 12 through 15.

6.0 Discussion

SE did not conduct a statistical evaluation of chemicals, which were always below the laboratory detection limits. The details of the statistical evaluation exceedences are tabulated in Table 12 through 15. Specific information included in these Tables is indicated below:

- Table 12 indicates the contaminants, which exceeded upgradient mean +2(standard deviation) in the upper aquifer (monitoring wells that are shallow).
- Table 13 indicates the contaminants, which exceeded both action level and upgradient mean +2(standard deviation) in the upper aquifer.
- Table 14 indicates the contaminants, which exceeded upgradient mean +2(standard deviation) in the lower aquifer (monitoring wells that are deep).
- Table 15 indicates surface water sampling results that exceeded action levels

6.1 Methane monitoring: SE personnel conducted methane monitoring along the landfill boundary and fill area. Table 16 indicates the monitoring results from January 2001 through April 2002. A map indicating the location of methane sampling is attached to Appendix 2. Non-detectable concentrations of methane were recorded during this period.

Shekar Engineering requested IDNR for a variance to terminate methane monitoring. The IDNR approved (May 20, 2002) Amendment #4 to the permit and allowed termination of methane monitoring.

6.2 Leachate Wells: Piezometers L-1 and L-2, which were installed to monitor leachate quality and migration have always remained dry. This is an indication that the landfill leachates are not impacting the local groundwater.

7.0 Recommendation

Shekar Engineering recommends continued site monitoring in accordance with the approved Hydrologic Monitoring System Plan.

**APPENDIX - 1
TABLES**

TABLE-1 Continued: GROUNDWATER ANALYTICAL RESULTS (MW-92-1)

Boring / Well Number	MCL or Action Level	MW-92-1	MW-92-1	MW-92-1	MW-92-1	MW-92-1	MW-92-1	MW-92-1
Date Sampled	NA	4/28/05	10/27/05	4/27/06	10/19/06			
Elevations - Ground Surface - Top of Screen	NA NA							
- Static Groundwater	NA	22.70	20.44	19.32	19.95			
1,1,1-Trichloroethane (µg/L)	200	NT	NT	NT	NT	NT	NT	NT
1,1-Dichloroethane (µg/L)	NA	NT	NT	NT	NT	NT	NT	NT
1,2-Dichloroethane (µg/L)	5	NT	NT	NT	NT	NT	NT	NT
1,4-Dichlorobenzene (µg/L)	600	NT	NT	NT	NT	NT	NT	NT
Benzene (µg/L)	5	NT	NT	NT	NT	NT	NT	NT
Carbon Tetrachloride (µg/L)	5	NT	NT	NT	NT	NT	NT	NT
Trichloroethylene (µg/L)	5	10.9	8.4	8.0	5.8			
Arsenic, dissolved (mg/L)	0.05	NT	NT	NT	NT	NT	NT	NT
Barium, dissolved (mg/L)	2	NT	NT	NT	NT	NT	NT	NT
Cadmium, dissolved (mg/L)	0.005	NT	NT	NT	NT	NT	NT	NT
Chromium, dissolved (mg/L)	0.1	NT	NT	NT	NT	NT	NT	NT
Copper, dissolved (mg/L)	1	NT	NT	NT	NT	NT	NT	NT
Iron, dissolved (mg/L)	0.3	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Lead, dissolved (mg/L)	0.015	NT	NT	NT	NT	NT	NT	NT
Magnesium, dissolved (mg/L)	NA	NT	NT	NT	NT	NT	NT	NT
Mercury, dissolved (mg/L)	0.002	NT	NT	NT	NT	NT	NT	NT
Zinc, dissolved (mg/L)	5	NT	NT	NT	NT	NT	NT	NT
Chemical Oxygen Demand (mg/L)	NA	22	<10	<10	<10	<10	<10	<10
Chloride (mg/L)	250	60	54	52	59			
Nitrogen, Ammonia (mg/L)	NA	<1	<1	<1	<1	<1	<1	<1
Phenols, total (mg/L)	4	NT	<0.1	NT	<0.1	NT	<0.1	
Total Organic Halogens (TOX) (mg/L)	none	NT	0.076	NT	0.045			

NT = Not Tested

TABLE-2 Continued: GROUNDWATER ANALYTICAL RESULTS (MW-92-1R)

Boring / Well Number	MCL or Action Level	MW-92-1R	MW-92-1R	MW-92-1R (Duplicate)	MW-92-1R	MW-92-1R	MW-92-1R	MW-92-1R	MW-92-1R
Date Sampled	NA	4/27/06	10/19/06	10/19/06					
Elevations - Ground Surface	NA								
- Top of Screen	NA								
- Static Groundwater	NA	12.50	13.41	13.41					
1,1,1-Trichloroethane ($\mu\text{g/L}$)	200	NT	NT	NT					
1,1-Dichloroethane ($\mu\text{g/L}$)	NA	NT	NT	NT					
1,2-Dichloroethane ($\mu\text{g/L}$)	5	NT	NT	NT					
1,4-Dichlorobenzene ($\mu\text{g/L}$)	600	NT	NT	NT					
Benzene ($\mu\text{g/L}$)	5	NT	NT	NT					
Carbon Tetrachloride ($\mu\text{g/L}$)	5	NT	NT	NT					
Trichloroethylene ($\mu\text{g/L}$)	5	<0.3	<1.0	<1.0					
Arsenic, dissolved (mg/L)	0.05	NT	NT	NT					
Barium, dissolved (mg/L)	2	NT	NT	NT					
Cadmium, dissolved (mg/L)	0.005	NT	NT	NT					
Chromium, dissolved (mg/L)	0.1	NT	NT	NT					
Copper, dissolved (mg/L)	1	NT	NT	NT					
Iron, dissolved (mg/L)	0.3	<0.03	<0.03	<0.03					
Lead, dissolved (mg/L)	0.015	NT	NT	NT					
Magnesium, dissolved (mg/L)	NA	NT	NT	NT					
Mercury, dissolved (mg/L)	0.002	NT	NT	NT					
Zinc, dissolved (mg/L)	5	NT	NT	NT					
Chemical Oxygen Demand (mg/L)	NA	<10	14	11					
Chloride (mg/L)	250	61	103	100					
Nitrogen, Ammonia (mg/L)	NA	<1	<1.0	<1					
Phenols, total (mg/L)	4	NT	<0.10	<0.1					
Total Organic Halogens (TOX) (mg/L)	none	NT	0.038	0.034					

NT = Not Tested.

TABLE-3 Continued: GROUNDWATER ANALYTICAL RESULTS (MW-92-2)

Boring / Well Number	MCL or Action Level	MW-92-2	MW-92-2	MW-92-2	MW-92-2 Duplicate	MW-92-2	MW-92-2	MW-92-2	MW-92-2
Date Sampled	NA	4/30/04	10/13/04	4/28/05	4/28/05	10/27/05	4/27/06	10/19/06	
Elevations - Ground Surface	NA								
- Top of Screen	NA								
- Static Groundwater	NA	19.63	18.78	23.37	23.37	21.48	20.00	20.65	
1,1,1-Trichloroethane ($\mu\text{g/L}$)	200	NT	NT	NT	NT	NT	NT	NT	
1,1-Dichloroethane ($\mu\text{g/L}$)	NA	NT	NT	NT	NT	NT	NT	NT	
1,2-Dichloroethane ($\mu\text{g/L}$)	5	NT	NT	NT	NT	NT	NT	NT	
1,4-Dichlorobenzene ($\mu\text{g/L}$)	600	NT	NT	NT	NT	NT	NT	NT	
Benzene ($\mu\text{g/L}$)	5	NT	NT	NT	NT	NT	NT	NT	
Carbon Tetrachloride ($\mu\text{g/L}$)	5	NT	NT	NT	NT	NT	NT	NT	
Trichloroethylene ($\mu\text{g/L}$)	5	<0.3	0.8	3.2	3.2	<0.3	7.6	6.3	
Arsenic, dissolved (mg/L)	0.05	NT	NT	NT	NT	NT	NT	NT	
Barium, dissolved (mg/L)	2	NT	NT	NT	NT	NT	NT	NT	
Cadmium, dissolved (mg/L)	0.005	NT	NT	NT	NT	NT	NT	NT	
Chromium, dissolved (mg/L)	0.1	NT	NT	NT	NT	NT	NT	NT	
Copper, dissolved (mg/L)	1	NT	NT	NT	NT	NT	NT	NT	
Iron, dissolved (mg/L)	0.3	7.67	7.21	4.21	3.82	7.05	<0.030	<0.03	
Lead, dissolved (mg/L)	0.015	NT	NT	NT	NT	NT	NT	NT	
Magnesium, dissolved (mg/L)	NA	NT	NT	NT	NT	NT	NT	NT	
Mercury, dissolved (mg/L)	0.002	NT	NT	NT	NT	NT	NT	NT	
Zinc, dissolved (mg/L)	5	NT	NT	NT	NT	NT	NT	NT	
Chemical Oxygen Demand (mg/L)	NA	17	<10	<10	16	14	<10	10	
Chloride (mg/L)	250	73	72	40	39	50	46	48	
Nitrogen, Ammonia (mg/L)	NA	<1	<1	<1	<1	<1	<1	<1.0	
Phenols, total (mg/L)	4	NT	<0.1	NT	NT	<0.1	NT	<0.1	
Total Organic Halogens (TOX) (mg/L)	none	NT	0.020	NT	NT	0.037	NT	0.040	

NT = Not Tested

TABLE-4 Continued: GROUNDWATER ANALYTICAL RESULTS (MW-92-3)

Boring / Well Number	MCL or Action Level	MW-92-3	MW-92-3	MW-92-3	MW-92-3	MW-92-3	MW-92-3	MW-92-3	MW-92-3
Date Sampled	NA	4/27/06	10/19/06						
Elevations - Ground Surface	NA								
- Top of Screen	NA								
- Static Groundwater	NA	20.66	22.08						
1,1,1-Trichloroethane ($\mu\text{g/L}$)	200	NT	NT						
1,1-Dichloroethane ($\mu\text{g/L}$)	NA	NT	NT						
1,2-Dichloroethane ($\mu\text{g/L}$)	5	NT	NT						
1,4-Dichlorobenzene ($\mu\text{g/L}$)	600	NT	NT						
Benzene ($\mu\text{g/L}$)	5	NT	NT						
Carbon Tetrachloride ($\mu\text{g/L}$)	5	NT	NT						
Trichloroethylene ($\mu\text{g/L}$)	5	0.3	<0.1						
Arsenic, dissolved (mg/L)	0.05	NT	NT						
Barium, dissolved (mg/L)	2	NT	NT						
Cadmium, dissolved (mg/L)	0.005	NT	NT						
Chromium, dissolved (mg/L)	0.1	NT	NT						
Copper, dissolved (mg/L)	1	NT	NT						
Iron, dissolved (mg/L)	0.3	<0.03	0.055						
Lead, dissolved (mg/L)	0.015	NT	NT						
Magnesium, dissolved (mg/L)	NA	NT	NT						
Mercury, dissolved (mg/L)	0.002	NT	NT						
Zinc, dissolved (mg/L)	5	NT	NT						
Chemical Oxygen Demand (mg/L)	NA	<10	<10						
Chloride (mg/L)	250	49	20						
Nitrogen, Ammonia (mg/L)	NA	<1	<1.0						
Phenols, total (mg/L)	4	NT	<0.10						
Total Organic Halogens (TOX) (mg/L)	none	NT	0.014						

NT = Not Tested. **Not Sampled, not enough water.

TABLE-5 Continued: GROUNDWATER ANALYTICAL RESULTS (MW-92-4)

Boring / Well Number	MCL or Action Level	MW-92-4	MW-92-4	MW-92-4	MW-92-4	MW-92-4	MW-92-4	MW-92-4	MW-92-4
Date Sampled	NA	10/13/04	4/28/05	10/27/05	4/27/06	10/19/06			
Elevations - Ground Surface	NA								
- Top of Screen	NA								
- Static Groundwater	NA	22.10	27.31	24.22	22.21	23.58			
1,1,1-Trichloroethane ($\mu\text{g/L}$)	200	NT	NT	NT	NT	NT			
1,1-Dichloroethane ($\mu\text{g/L}$)	NA	NT	NT	NT	NT	NT			
1,2-Dichloroethane ($\mu\text{g/L}$)	5	NT	NT	NT	NT	NT			
1,4-Dichlorobenzene ($\mu\text{g/L}$)	600	NT	NT	NT	NT	NT			
Benzene ($\mu\text{g/L}$)	5	NT	NT	NT	NT	NT			
Carbon Tetrachloride ($\mu\text{g/L}$)	5	NT	NT	NT	NT	NT			
Trichloroethylene ($\mu\text{g/L}$)	5	<0.3	<0.3	<0.3	<0.3	<1.0			
Arsenic, dissolved (mg/L)	0.05	NT	NT	NT	NT	NT			
Barium, dissolved (mg/L)	2	NT	NT	NT	NT	NT			
Cadmium, dissolved (mg/L)	0.005	NT	NT	NT	NT	NT			
Chromium, dissolved (mg/L)	0.1	NT	NT	NT	NT	NT			
Copper, dissolved (mg/L)	1	NT	NT	NT	NT	NT			
Iron, dissolved (mg/L)	0.3	<0.03	<0.03	<0.03	<0.03	<0.03			
Lead, dissolved (mg/L)	0.015	NT	NT	NT	NT	NT			
Magnesium, dissolved (mg/L)	NA	NT	NT	NT	NT	NT			
Mercury, dissolved (mg/L)	0.002	NT	NT	NT	NT	NT			
Zinc, dissolved (mg/L)	5	NT	NT	NT	NT	NT			
Chemical Oxygen Demand (mg/L)	NA	<10	<10	<10	<10	<10			
Chloride (mg/L)	250	111	55	106	84	117			
Nitrogen, Ammonia (mg/L)	NA	<1	<1	<1	<1	<1			
Phenols, total (mg/L)	4	<0.1	NT	<0.1	NT	<0.1			
Total Organic Halogens (TOX) (mg/L)	none	0.040	NT	0.049	NT	0.047			

NT = Not Tested

TABLE-6 Continued: GROUNDWATER ANALYTICAL RESULTS (MW-92-5)

Boring / Well Number	MCL or Action Level	MW-92-5	MW-92-5	MW-92-5	MW-92-5	MW-92-5	MW-92-5	MW-92-5	MW-92-5
Date Sampled	NA	10/13/04	4/28/05	10/27/05	4/27/06	10/19/06			
Elevations - Ground Surface	NA								
- Top of Screen	NA								
- Static Groundwater	NA	22.34	27.36	24.48	22.70	24.24			
1,1,1-Trichloroethane ($\mu\text{g/L}$)	200	NT	NT	NT	NT	NT			
1,1-Dichloroethane ($\mu\text{g/L}$)	NA	NT	NT	NT	NT	NT			
1,2-Dichloroethane ($\mu\text{g/L}$)	5	NT	NT	NT	NT	NT			
1,4-Dichlorobenzene ($\mu\text{g/L}$)	600	NT	NT	NT	NT	NT			
Benzene ($\mu\text{g/L}$)	5	NT	NT	NT	NT	NT			
Carbon Tetrachloride ($\mu\text{g/L}$)	5	NT	NT	NT	NT	NT			
Trichloroethylene ($\mu\text{g/L}$)	5	<0.3	<0.3	<0.3	<0.3	<1.0			
Arsenic, dissolved (mg/L)	0.05	NT	NT	NT	NT	NT			
Barium, dissolved (mg/L)	2	NT	NT	NT	NT	NT			
Cadmium, dissolved (mg/L)	0.005	NT	NT	NT	NT	NT			
Chromium, dissolved (mg/L)	0.1	NT	NT	NT	NT	NT			
Copper, dissolved (mg/L)	1	NT	NT	NT	NT	NT			
Iron, dissolved (mg/L)	0.3	<0.03	5.78	6.07	0.049	<0.03			
Lead, dissolved (mg/L)	0.015	NT	NT	NT	NT	NT			
Magnesium, dissolved (mg/L)	NA	NT	NT	NT	NT	NT			
Mercury, dissolved (mg/L)	0.002	NT	NT	NT	NT	NT			
Zinc, dissolved (mg/L)	5	NT	NT	NT	NT	NT			
Chemical Oxygen Demand (mg/L)	NA	<10	15	16	<10	<10			
Chloride (mg/L)	250	68	56	52	57	56			
Nitrogen, Ammonia (mg/L)	NA	<1	<1	<1	<1	<1			
Phenols, total (mg/L)	4	<0.1	NT	<0.1	NT	<0.1			
Total Organic Halogens (TOX) (mg/L)	none	0.019	NT	0.041	NT	0.019			

NT = Not Tested

TABLE-7 Continued: GROUNDWATER ANALYTICAL DATA (MW-92-6)

Boring / Well Number	MCL or Action Level	MW-92-6	MW-92-6	MW-92-6	MW-92-6	MW-92-6	MW-92-6	MW-92-6	MW-92-6
Date Sampled	NA	10/13/04	4/28/05	10/27/05	4/27/06	10/19/06			
Elevations - Ground Surface	NA								
- Top of Screen	NA								
- Static Groundwater	NA	24.29	29.15	26.37	24.62	26.13			
1,1,1-Trichloroethane ($\mu\text{g/L}$)	200	NT	NT	NT	NT	NT			
1,1-Dichloroethane ($\mu\text{g/L}$)	NA	NT	NT	NT	NT	NT			
1,2-Dichloroethane ($\mu\text{g/L}$)	5	NT	NT	NT	NT	NT			
1,4-Dichlorobenzene ($\mu\text{g/L}$)	600	NT	NT	NT	NT	NT			
Benzene ($\mu\text{g/L}$)	5	NT	NT	NT	NT	NT			
Carbon Tetrachloride ($\mu\text{g/L}$)	5	NT	NT	NT	NT	NT			
Trichloroethylene ($\mu\text{g/L}$)	5	<0.3	<0.3	<0.3	<0.3	<1			
Arsenic, dissolved (mg/L)	0.05	NT	NT	NT	NT	NT			
Barium, dissolved (mg/L)	2	NT	NT	NT	NT	NT			
Cadmium, dissolved (mg/L)	0.005	NT	NT	NT	NT	NT			
Chromium, dissolved (mg/L)	0.1	NT	NT	NT	NT	NT			
Copper, dissolved (mg/L)	1	NT	NT	NT	NT	NT			
Iron, dissolved (mg/L)	0.3	0.068	0.043	0.232	0.429	0.135			
Lead, dissolved (mg/L)	0.015	NT	NT	NT	NT	NT			
Magnesium, dissolved (mg/L)	NA	NT	NT	NT	NT	NT			
Mercury, dissolved (mg/L)	0.002	NT	NT	NT	NT	NT			
Zinc, dissolved (mg/L)	5	NT	NT	NT	NT	NT			
Chemical Oxygen Demand (mg/L)	NA	13	23	16	<10	18			
Chloride (mg/L)	250	123	126	103	120	119			
Nitrogen, Ammonia (mg/L)	NA	<1	<1	<1	<1	<1			
Phenols, total (mg/L)	4	<0.1	NT	<0.1	NT	<0.1			
Total Organic Halogens (TOX) (mg/L)	none	0.042	NT	0.052	NT	0.031			

NT = Not Tested

TABLE-8 Continued: GROUNDWATER ANALYTICAL RESULTS (MW-92-7)

Boring / Well Number	MCL or Action Level	MW-92-7	MW-92-7	MW-92-7	MW-92-7	MW-92-7	MW-92-7	MW-92-7	MW-92-7
Date Sampled	NA	4/30/04	10/13/04	4/28/05	10/27/05	4/27/06	10/19/06		
Elevations - Ground Surface	NA								
- Top of Screen	NA								
- Static Groundwater	NA	24.87	24.43	29.28	26.51	24.75	26.30		
1,1,1-Trichloroethane ($\mu\text{g/L}$)	200	NT	NT	NT	NT	NT	NT		
1,1-Dichloroethane ($\mu\text{g/L}$)	NA	NT	NT	NT	NT	NT	NT		
1,2-Dichloroethane ($\mu\text{g/L}$)	5	NT	NT	NT	NT	NT	NT		
1,4-Dichlorobenzene ($\mu\text{g/L}$)	600	NT	NT	NT	NT	NT	NT		
Benzene ($\mu\text{g/L}$)	5	NT	NT	NT	NT	NT	NT		
Carbon Tetrachloride ($\mu\text{g/L}$)	5	NT	NT	NT	NT	NT	NT		
Trichloroethylene ($\mu\text{g/L}$)	5	<0.3	<0.3	<0.3	<0.3	<0.3	<1		
Arsenic, dissolved (mg/L)	0.05	NT	NT	NT	NT	NT	NT		
Barium, dissolved (mg/L)	2	NT	NT	NT	NT	NT	NT		
Cadmium, dissolved (mg/L)	0.005	NT	NT	NT	NT	NT	NT		
Chromium, dissolved (mg/L)	0.1	NT	NT	NT	NT	NT	NT		
Copper, dissolved (mg/L)	1	NT	NT	NT	NT	NT	NT		
Iron, dissolved (mg/L)	0.3	1.25	6.33	5.05	5.50	6.51	6.54		
Lead, dissolved (mg/L)	0.015	NT	NT	NT	NT	NT	NT		
Magnesium, dissolved (mg/L)	NA	NT	NT	NT	NT	NT	NT		
Mercury, dissolved (mg/L)	0.002	NT	NT	NT	NT	NT	NT		
Zinc, dissolved (mg/L)	5	NT	NT	NT	NT	NT	NT		
Chemical Oxygen Demand (mg/L)	NA	20	<10	28	11	<10	17		
Chloride (mg/L)	250	53	49	61	55	58	56		
Nitrogen, Ammonia (mg/L)	NA	<1	<1	<1	<1	<1	<1		
Phenols, total (mg/L)	4	NT	<0.1	NT	<0.1	NT	<0.1		
Total Organic Halogens (TOX) (mg/L)	none	NT	0.022	NT	0.041	NT	0.019		

NT = Not Tested

TABLE-9 Continued: GROUNDWATER ANALYTICAL RESULTS (SURFACE WATER BODY)

Boring / Well Number	MCL or Action Level	SW-1	SW-1	SW-1	SW-1	SW-1	SW-1	SW-1	SW-1
Date Sampled	NA	4/28/05	10/27/05	4/27/06	10/19/06				
Elevations - Ground Surface	NA								
- Top of Screen	NA								
- Static Groundwater	NA								
1,1,1-Trichloroethane ($\mu\text{g/L}$)	200	NT	NT	NT	NT				
1,1-Dichloroethane ($\mu\text{g/L}$)	NA	NT	NT	NT	NT				
1,2-Dichloroethane ($\mu\text{g/L}$)	5	NT	NT	NT	NT				
1,4-Dichlorobenzene ($\mu\text{g/L}$)	600	NT	NT	NT	NT				
Benzene ($\mu\text{g/L}$)	5	NT	NT	NT	NT				
Carbon Tetrachloride ($\mu\text{g/L}$)	5	NT	NT	NT	NT				
Trichloroethylene ($\mu\text{g/L}$)	5	<0.3	<0.3	<0.3	<1				
Arsenic, dissolved (mg/L)	0.05	NT	NT	NT	NT				
Barium, dissolved (mg/L)	2	NT	NT	NT	NT				
Cadmium, dissolved (mg/L)	0.005	NT	NT	NT	NT				
Chromium, dissolved (mg/L)	0.1	NT	NT	NT	NT				
Copper, dissolved (mg/L)	1	NT	NT	NT	NT				
Iron, dissolved (mg/L)	0.3	0.104	0.085	0.083	0.378				
Lead, dissolved (mg/L)	0.015	NT	NT	NT	NT				
Magnesium, dissolved (mg/L)	NA	NT	NT	NT	NT				
Mercury, dissolved (mg/L)	0.002	NT	NT	NT	NT				
Zinc, dissolved (mg/L)	5	NT	NT	NT	NT				
Chemical Oxygen Demand (mg/L)	NA	<10	16	10	33				
Chloride (mg/L)	250	61	64	81	68				
Nitrogen, Ammonia (mg/L)	NA	<1	<1	<1	<1				
Phenols, total (mg/L)	4	NT	<0.1	NT	<0.1				
Total Organic Halogens (TOX) (mg/L)	none	NT	0.026	NT	0.015				

NT = Not Tested

TABLE 11 Continued: STATIC GROUNDWATER LEVELS

Boring / Well Number	Static Water Levels	Static Water Level								
Date	4/24/03	10/30/03	4/30/04	10/13/04	4/28/05	10/27/05	4/27/06	10/19/06		
MW-92-1	20.69	20.02	18.95	18.17	22.70	20.44	19.32	19.95		
MW-92-1R	14.15	13.65	12.38	11.65	16.30	13.85	12.50	13.41		
MW-92-2	21.37	20.69	19.63	18.78	23.37	21.48	20.00	20.65		
MW-92-3	22.54	22.29	20.77	20.27	25.35	22.38	20.66	22.08		
MW-92-4	24.32	24.13	22.61	22.10	27.31	24.22	22.21	23.58		
MW-92-5	24.63	24.39	22.79	22.34	27.36	24.48	22.70	24.24		
MW-92-6	26.54	26.31	24.65	24.29	29.15	26.37	24.62	26.13		
MW-92-7	26.70	26.49	24.87	24.43	28.28	26.51	24.75	26.30		
L-1	NA	NA	Dry	Dry	Dry	Dry	Dry	Dry		
L-2	NA	NA	Dry	Dry	Dry	Dry	Dry	Dry		

NA = Not Available

TABLE 12: UPPER AQUIFER (Monitoring wells are shallow): Upgradient Mean + 2(Standard Deviation)

Chemical	Upgradient Mean + 2(standard deviation)	Date of exceedence(s)	Monitoring well concentration (mg/L)	
			MW-92-4	MW-92-6
Zinc	0.030	4/97	0.032	
		7/97	0.046	0.031
Chloride	60.71	4/97		61
		7/97		88
		10/97		155
		1/98	80	142
		3/99		100
		4/00		120
		10/00		119
		4/01		135
		10/01	63	117
		4/02	75	126
		10/02	102	127
		4/03	64	129
		10/03	117	113
		4/04	61	115
		10/04	115	123
Nitrogen, Ammonia	1.47	4/05		126
		10/05	106	103
		4/06	84	120
		10/06	117	119
		10/97		3.2
Iron, Dissolved	0.23	9/98		4.12
		10/00		0.358
		4/03		0.933
		4/06		0.429
Chemical O₂ Demand	17.35	10/97		36
		1/98	23	26
		3/99		19.4
		10/00		22
		10/02	20	21
		4/03	24	
		10/03	24	
		4/04		19
		4/05		23
		10/06		18

TABLE 12: Continued...

Chemical	Upgradient Mean + 2(standard deviation)	Date of exceedence(s)	Monitoring well concentration (mg/L)	
			MW-92-4	MW-92-6
Conductance	1.25	9/98		1.50
		4/00		1.86
		10/00		1.79
		4/01		1.83
		10/01		1.33
		4/02		1.32
		10/02		1.52
		4/03		1.71
		4/05		1.27
		10/05		1.27
		4/06		1.53
		10/06	1.30	1.37
PH	8.14	10/97		9.9
		1/98		8.6
		4/01		7.8
Temperature	16.13	7/97	21.1	20

TABLE 13: Chemicals exceeding both Action Levels and Upgradient Mean + 2(Standard Deviation)

Chemical	Date of exceedence(s)	Action Level	Upgradient Mean + 2(standard deviation)	Monitoring well concentration (mg/L)	
					MW-92-6
Arsenic	7/97	0.001	0.001		0.009
	10/97				0.014
	1/98				0.005
Iron	9/98	0.3	0.23		4.12
	10/00				0.358
	4/03				0.933
	4/06				0.429
PH	10/97	Upper action level = 8.5	8.14		9.9
	1/98				8.6

TABLE 14: LOWER AQUIFER (Monitoring wells are deep): Upgradient Mean + 2(Standard Deviation)

Chemical	Upgradient Mean + 2(standard deviation)	Date of exceedence(s)	Monitoring well concentration (mg/L)	
			MW-92-5	MW-92-7
Barium	0.1599	1/98		0.167
		3/99	0.19	0.164
Magnesium, Dissolved	52.8382	4/97		57
		1/98		61
		3/99		55.7
Zinc, Dissolved	0.0486	7/97	0.083	0.072
Chloride	97.32	10/03		113
Chemical O₂ Demand	16.58	4/97		19
		4/03		25
		4/04		20
		4/05		28
		10/06		17
Conductance	1.32	9/98		1.5
		3/99		1.43
		10/02		1.35
Temperature	16.26	7/97	18.30	17.80

TABLE 15: SURFACE WATER RESULTS EXCEEDING ACTION LEVELS

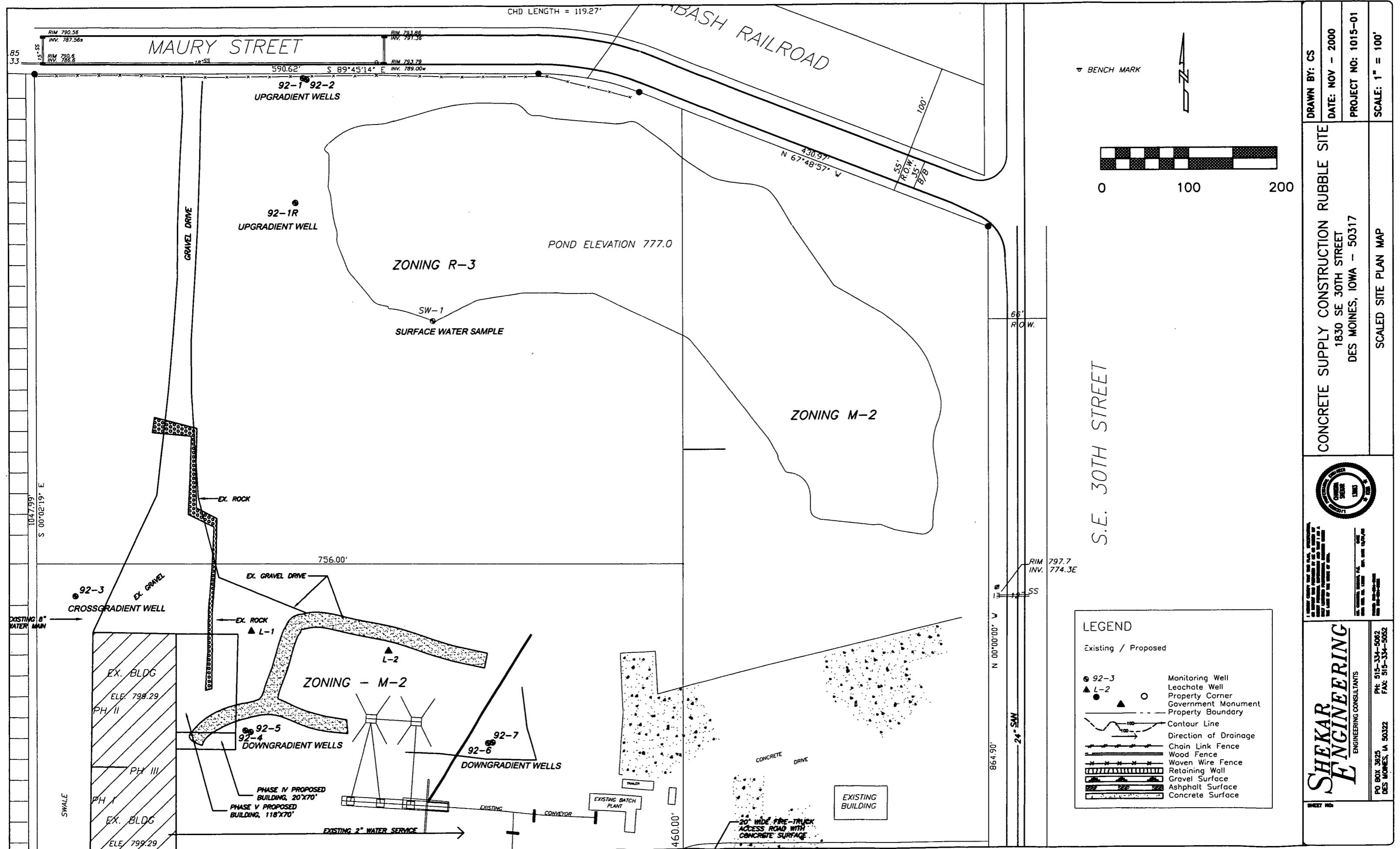
Chemical	Date of exceedence(s)	Action Level	SW-1 concentration
Arsenic	4/97	0.001	0.0013 mg/L
	7/97		0.002 mg/L
	10/97		0.0029 mg/L
	1/98		0.003 mg/L
	9/98		0.003 mg/L
PH	4/97	Upper action level = 8.5	11.4
	7/97	Lower action level = 6.5	10.1
	10/97		11.2
	1/98		11.8
	9/98		9.5
	3/99		9.8
	4/00		9.8
	4/01		8.7
	4/02		11.3
	10/02		11.2
	4/03		11.3
	10/03		10.6
	4/04		10.29
	10/04		9.42
	4/05		9.16
	10/05		9.77
	4/06		10.02
	10/06		10.43

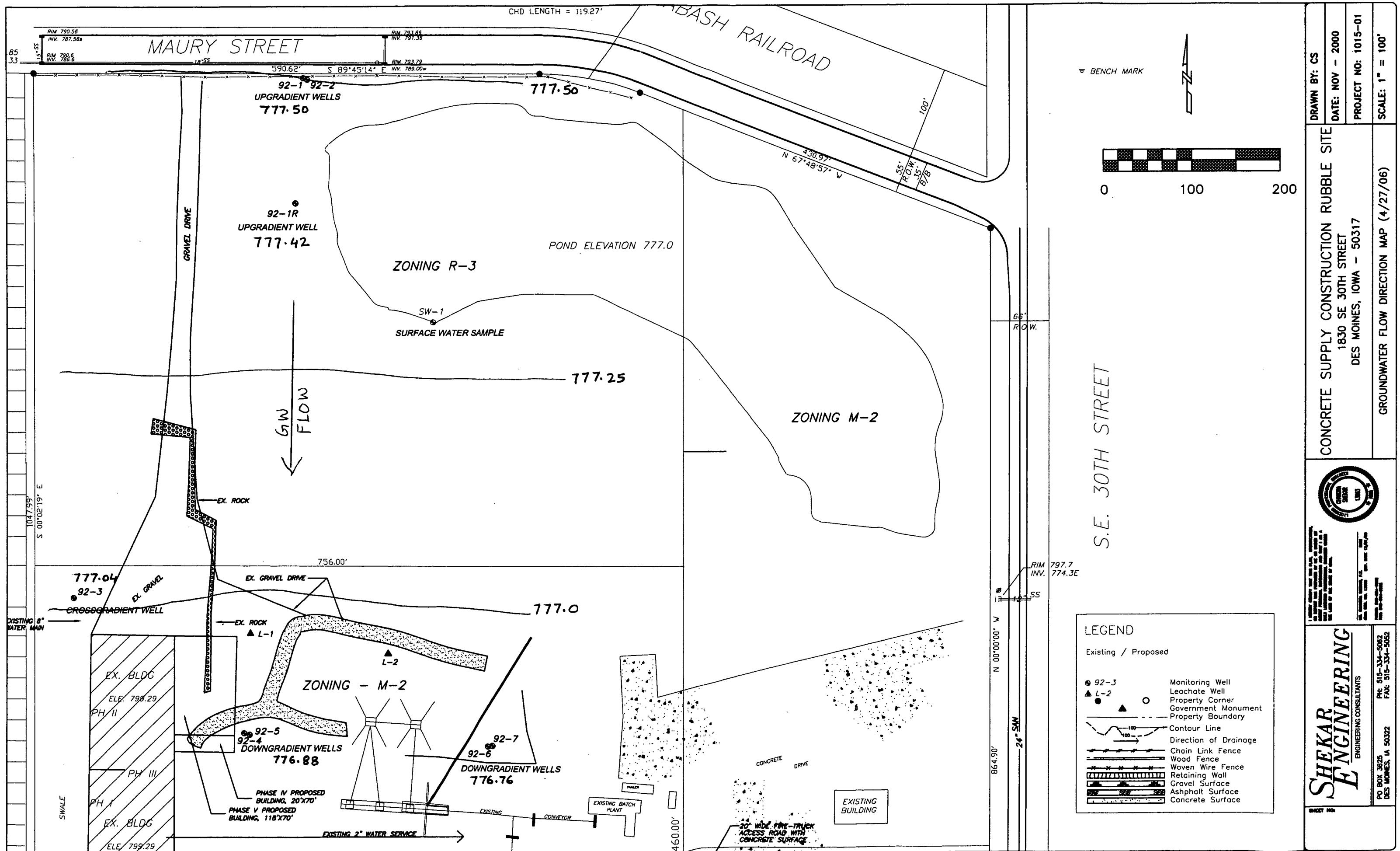
TABLE 16: METHANE MONITORING RESULTS

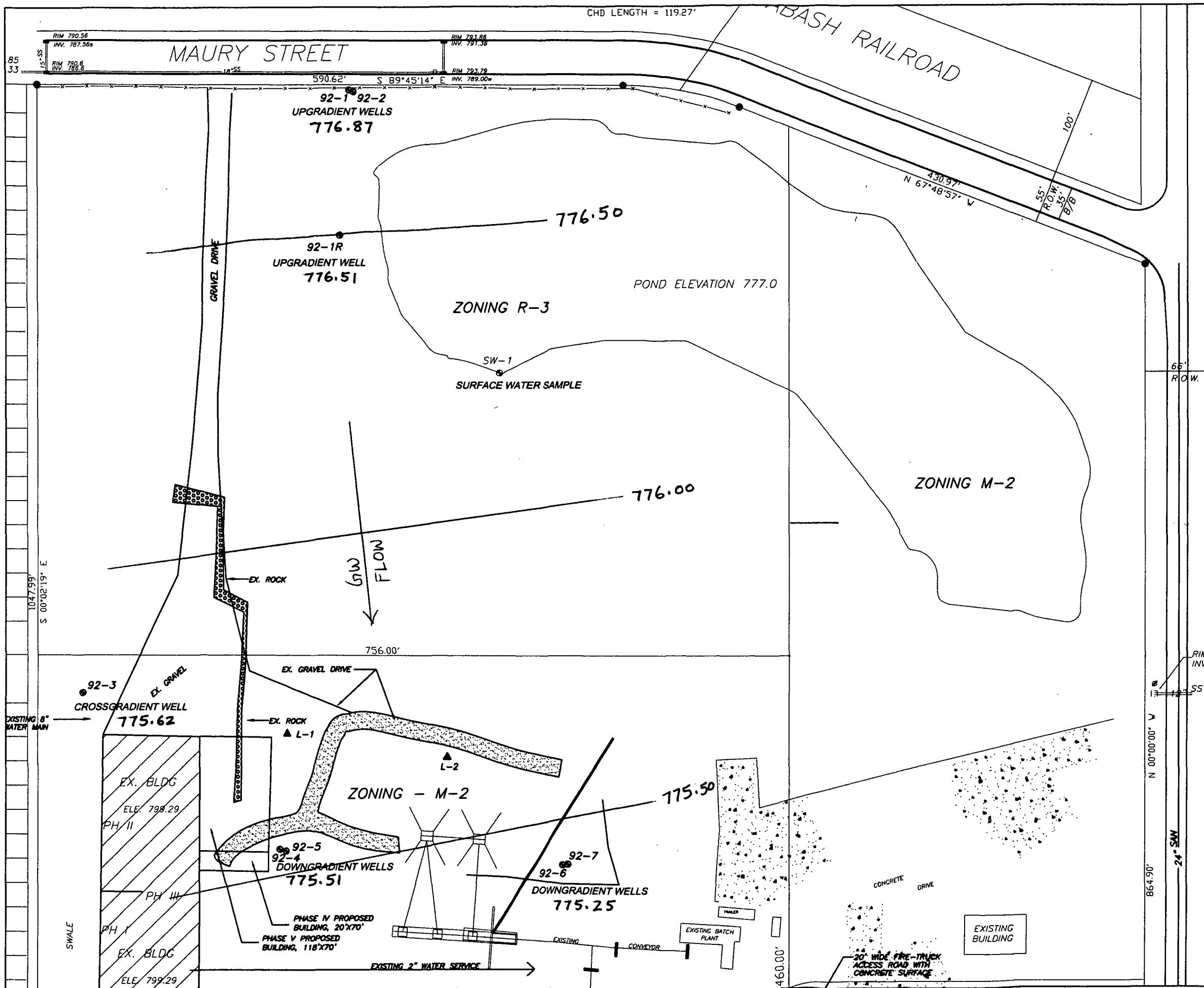
Methane Sampling Location	Methane Reading									
Date	1/12/01	2/12/01	3/29/01	4/30/01	5/25/01	6/30/01	7/31/01	8/31/01	9/29/01	10/29/01
Location-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Location-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Location-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Location-4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Location-5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Location-6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Location-7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Location-8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Methane Sampling Location	Methane Reading									
Date	11/30/01	12/31/01	1/31/02	2/25/02	3/29/02	4/28/02				
Location-1	0.00	0.00	0.00	0.00	0.00	0.00				
Location-2	0.00	0.00	0.00	0.00	0.00	0.00				
Location-3	0.00	0.00	0.00	0.00	0.00	0.00				
Location-4	0.00	0.00	0.00	0.00	0.00	0.00				
Location-5	0.00	0.00	0.00	0.00	0.00	0.00				
Location-6	0.00	0.00	0.00	0.00	0.00	0.00				
Location-7	0.00	0.00	0.00	0.00	0.00	0.00				
Location-8	0.00	0.00	0.00	0.00	0.00	0.00				

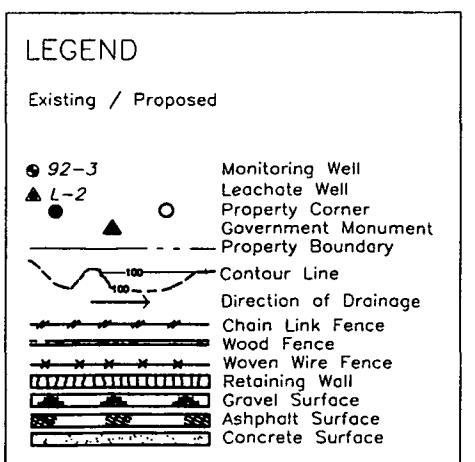
APPENDIX - 2
MAPS







S.E. 30TH STREET



CONCRETE SUPPLY CONSTRUCTION	RUBBLE SITE	DRAWN BY: CS
1830 SE 30TH STREET		DATE: NOV - 2000
DES MOINES, IOWA - 50317		PROJECT NO: 1015-01
	GROUNDWATER FLOW DIRECTION MAP (10/19/06)	SCALE: 1" = 100'

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SHEKAR	ENGINEERING	CONSULTANTS	Pt: 515-334-5082
PO BOX 3625 DES MOINES, IA 50322			FAX: 515-334-5082

APPENDIX - 3
CONTAMINANT GRAPHS

Upper Aquifer (Monitoring Wells are Shallow) Sampling Result - 1997 to 2006

Arsenic, Dissolved (mg/L)

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-1		MW-92-4	MW-92-6
Apr-97	<0.001		<0.001	0.001
Jul-97	<0.001		<0.001	0.009
Oct-97	<0.001		<0.001	0.014
Jan-98	<0.001		<0.001	0.005
Mar-99	<0.001		<0.001	<0.001

Upgradient Mean + 2(Standard Deviation) = **0.0010** Action Level = **0.001 dNRL**

Barium, Dissolved (mg/l)

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-1		MW-92-4	MW-92-6
Apr-97	0.091		0.042	0.075
Jul-97	0.089		0.035	0.034
Oct-97	0.085		0.037	0.030
Jan-98	0.098		0.04	0.069
Mar-99	0.085		0.05	0.098

Upgradient Mean + 2(Standard Deviation) = **0.1003** Action Level = **2 fHAL**

Magnesium, Dissolved (mg/l)

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-1		MW-92-4	MW-92-6
Apr-97	46.7		34.4	30.7
Jul-97	46.9		31.9	14
Oct-97	43		31.5	2.23
Jan-98	45		29	7.3
Mar-99	42.1		25.7	27.9

Upgradient Mean + 2(Standard Deviation) = **48.9952** Action Level = **None**

Zinc, Dissolved (mg/l)

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-1		MW-92-4	MW-92-6
Apr-97	<0.03		0.032	<0.03
Jul-97	<0.03		0.046	0.031
Oct-97	<0.03		<0.03	<0.03
Jan-98	<0.03		<0.03	<0.03
Mar-99	<0.03		<0.03	<0.03

Upgradient Mean + 2(Standard Deviation) = **0.0300** Action Level = **2 fHAL**

Trichloroethylene ($\mu\text{g/l}$)

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-1		MW-92-4	MW-92-6
Apr-97	6.4		<1	<1
Jul-97	3.0		<1	<1
Oct-97	6.0		<1	<1
Jan-98	6.9		<1	<1
Mar-99	6.3		<1	<1
Apr-00	9.7		<1	<1
Oct-00	20.0		<1	<1
Apr-01	4.4		<1	<1
Oct-01	4.8		<1	<1
Apr-02	5.9		<1	<1
Oct-02	6.8		<1	<1
Apr-03	7.3		<1	<1
Oct-03	7.0		<1	<1
Apr-04	6.3		<0.3	<0.3
Oct-04	6.4		<0.3	<0.3
Apr-05	10.9		<0.3	<0.3
Oct-05	8.4		<0.3	<0.3
Apr-06	8.0		<0.3	<0.3
Oct-06	5.8		<1	<1

Upgradient Mean + 2(Standard Deviation) = **14.45** Action Level = **3 fHAL**

Trichloroethylene ($\mu\text{g/l}$)

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-1R		MW-92-4	MW-92-6
Apr-97			<1	<1
Jul-97			<1	<1
Oct-97			<1	<1
Jan-98			<1	<1
Mar-99			<1	<1
Apr-00	<1		<1	<1
Jul-00	<1			
Oct-00	<1		<1	<1
Jan-01	<2			
Apr-01	<1		<1	<1
Oct-01	<1		<1	<1
Apr-02	<1		<1	<1
Oct-02	<1		<1	<1
Apr-03	<1		<1	<1
Oct-03	<1		<1	<1
Apr-04	<0.3		<0.3	<0.3
Oct-04	<0.3		<0.3	<0.3
Apr-05	<0.3		<0.3	<0.3
Oct-05	<0.3		<0.3	<0.3
Apr-06	<0.3		<0.3	<0.3
Oct-06	<1		<1	<1

Upgradient Mean + 2(Standard Deviation) = **1.75** Action Level = **3 fHAL**

Chloride (mg/l)

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-1		MW-92-4	MW-92-6
Apr-97	40		53	61
Jul-97	49		47	88
Oct-97	41		58	155
Jan-98	44		80	142
Sep-98	49		52	54
Mar-99	34		48	100
Apr-00	37		40	120
Oct-00	41		58	119
Apr-01	49		49	135
Oct-01	38		63	117
Apr-02	39		75	126
Oct-02	53		102	127
Apr-03	40		64	129
Oct-03	32		117	113
Apr-04	42		61	115
Oct-04	44		115	123
Apr-05	60		55	126
Oct-05	54		106	103
Apr-06	52		84	120
Oct-06	59		117	119

Upgradient Mean + 2(Standard Deviation) = **60.71** Action Level = **250 fSMCL**

Nitrogen, Ammonia (mg/l)

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-1		MW-92-4	MW-92-6
Apr-97	<1		<1	<1
Jul-97	<1		<1	<1
Oct-97	<1		<1	3.2
Jan-98	<1		<1	1.1
Sep-98	<1		<1	<1
Mar-99	1.9		<1	<1
Apr-00	<1		<1	<1
Oct-00	<1		<1	<1
Apr-01	<1		<1	<1
Oct-01	<1		<1	<1
Apr-02	<1		<1	<1
Oct-02	<1		<1	<1
Apr-03	<1		<1	<1
Oct-03	<1		<1	<1
Apr-04	<1		<1	<1
Oct-04	<1		<1	<1
Apr-05	<1		<1	<1
Oct-05	<1		<1	<1
Apr-06	<1		<1	<1
Oct-06	<1		<1	<1

Upgradient Mean + 2(Standard Deviation) = **1.45** Action Level = **30 dHAL**

Iron, Dissolved (mg/l)

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-1		MW-92-4	MW-92-6
Apr-97	<0.03		<0.03	<0.03
Jul-97	<0.03		<0.03	0.179
Oct-97	<0.03		0.046	0.235
Jan-98	<0.03		0.072	0.113
Sep-98	<0.03		<0.03	4.12
Mar-99	0.102		<0.03	<0.03
Apr-00	<0.03		0.106	0.051
Oct-00	<0.03		<0.03	0.358
Apr-01	0.368		0.054	0.247
Oct-01	<0.03		0.242	0.069
Apr-02	<0.03		0.049	0.154
Oct-02	<0.03		<0.03	0.159
Apr-03	<0.03		<0.03	0.933
Oct-03	<0.03		<0.03	0.075
Apr-04	<0.03		0.041	0.053
Oct-04	0.208		<0.03	0.068
Apr-05	<0.03		<0.03	0.043
Oct-05	<0.03		<0.03	0.232
Apr-06	<0.03		<0.03	0.429
Oct-06	<0.03		<0.03	0.135

Upgradient Mean + 2(Standard Deviation) = **0.23** Action Level = **0.3** f action level

Chemical Oxygen Demand (mg/l)

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-1		MW-92-4	MW-92-6
Apr-97	<10		14	15
Jul-97	<10		<10	<10
Oct-97	<10		<10	36
Jan-98	<10		23	26
Sep-98	<10		14	<10
Mar-99	<10		<10	19.4
Apr-00	<10		<10	<10
Oct-00	<10		<10	22
Apr-01	<10		<10	12
Oct-01	<10		<10	<10
Apr-02	14		<10	14
Oct-02	<10		20	21
Apr-03	17		24	15
Oct-03	<10		24	14
Apr-04	<10		15	19
Oct-04	<10		<10	13
Apr-05	22		<10	23
Oct-05	<10		<10	16
Apr-06	<10		<10	<10
Oct-06	<10		<10	18

Upgradient Mean + 2(Standard Deviation) = **17.35** Action Level = **None**

Conductance (mS)

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-1	MW-92-4	MW-92-6	
Apr-97	0.68	0.68	0.67	
Jul-97	1.00	0.90	0.80	
Oct-97	0.95	0.94	1.09	
Jan-98	0.93	0.90	1.23	
Sep-98	1.12	1.00	1.50	
Mar-99	1.02	0.96	1.21	
Apr-00	1.04	0.97	1.86	
Oct-00	1.15	0.96	1.79	
Apr-01	1.13	1.07	1.83	
Oct-01	1.02	0.90	1.33	
Apr-02	0.99	0.70	1.32	
Oct-02	1.18	0.74	1.52	
Apr-03	1.01	0.64	1.71	
Oct-03	1.04	0.98	1.19	
Apr-04	1.06	0.64	1.23	
Oct-04	1.13	0.97	1.19	
Apr-05	1.11	0.63	1.27	
Oct-05	1.01	1.23	1.27	
Apr-06	1.04	1.09	1.53	
Oct-06	1.08	1.30	1.37	

Upgradient Mean + 2(Standard Deviation) = **1.25** Action Level = None

pH

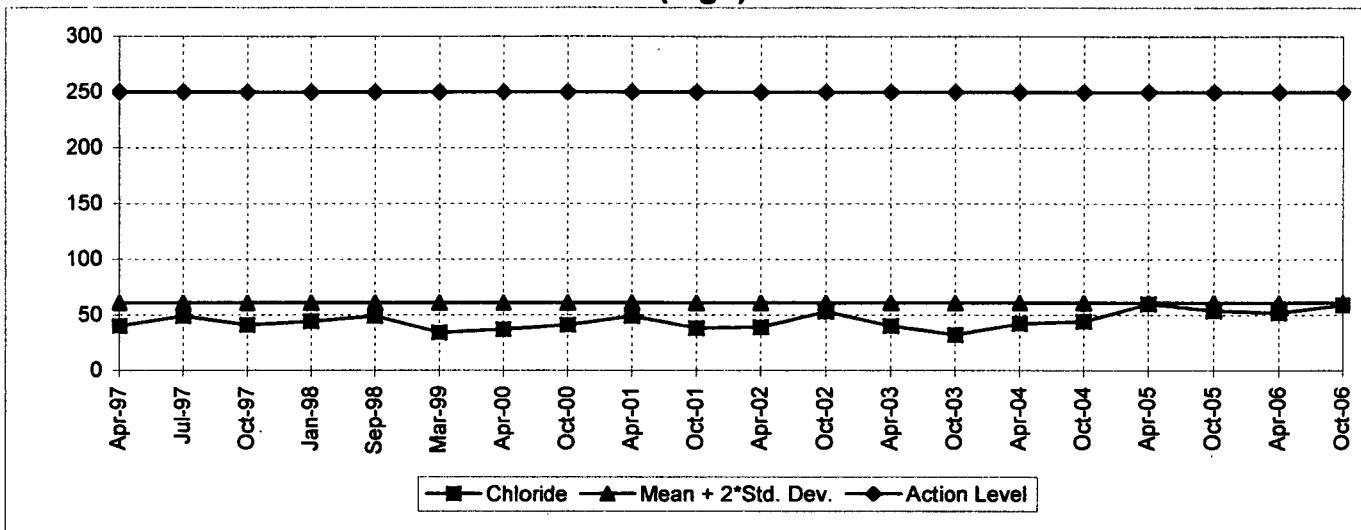
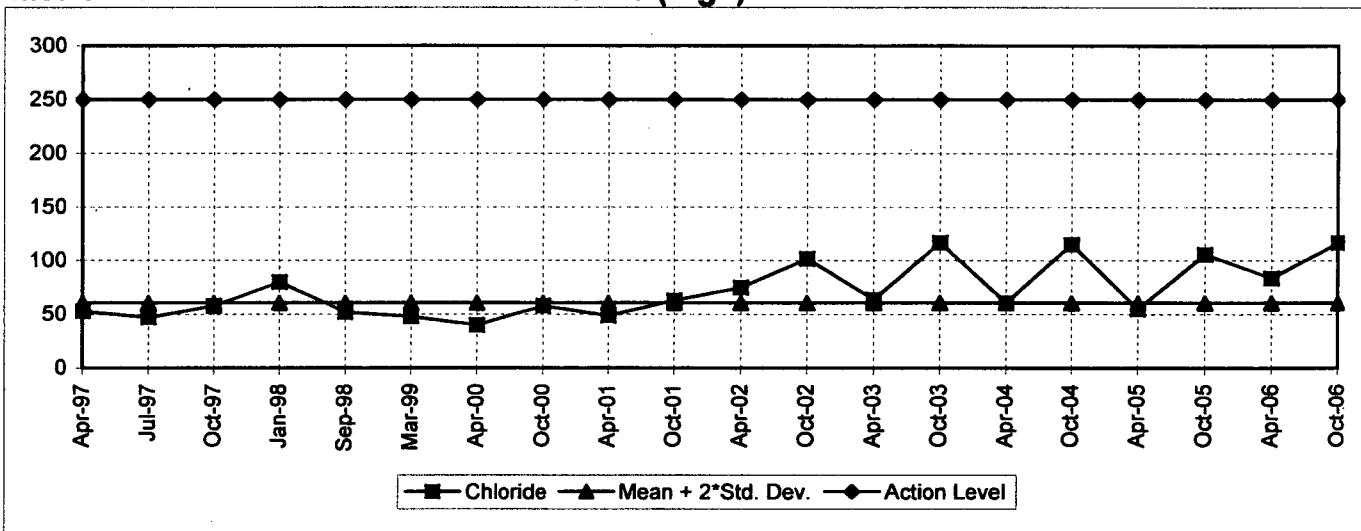
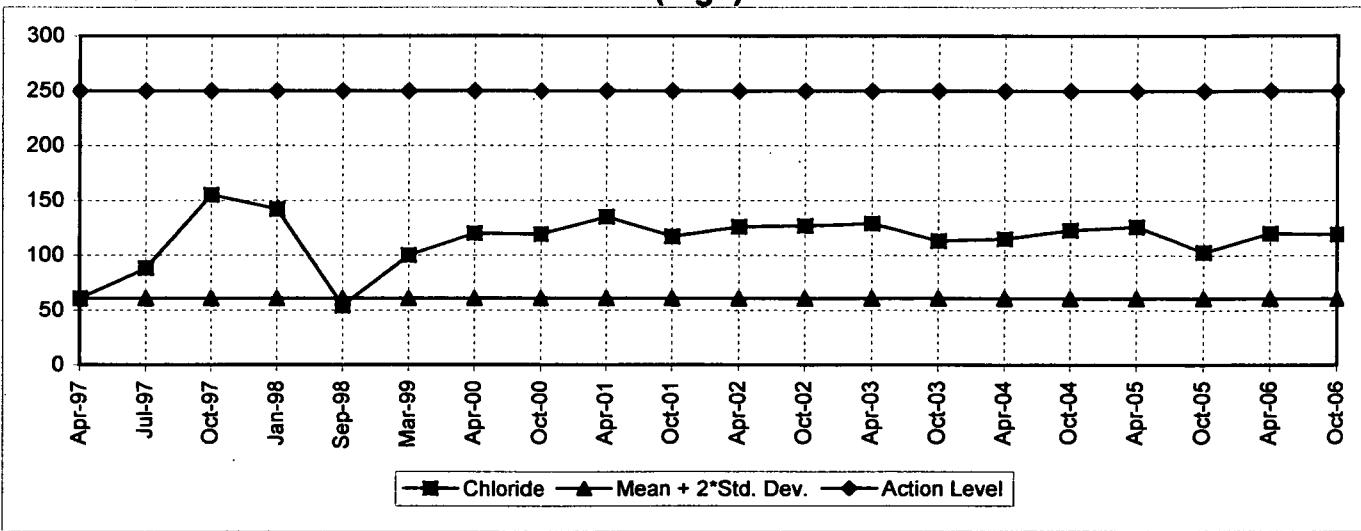
Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-1	MW-92-4	MW-92-6	
Apr-97	7.1	7.6	8.2	
Jul-97	6.7	7.3	8.0	
Oct-97	7.3	8.0	9.9	
Jan-98	7.4	7.8	8.6	
Sep-98	7.0	7.6	8.2	
Mar-99	6.7	6.8	7.0	
Apr-00	6.9	6.9	7.1	
Oct-00	6.7	7.1	7.0	
Apr-01	7.0	7.6	7.8	
Oct-01	7.7	6.8	7.0	
Apr-02	8.4	7.8	7.0	
Oct-02	6.8	7.2	6.8	
Apr-03	6.7	7.5	6.6	
Oct-03	5.9	6.7	6.9	
Apr-04	5.9	6.4	6.6	
Oct-04	5.3	6.4	7.3	
Apr-05	6.8	7.2	6.5	
Oct-05	6.0	6.9	6.5	
Apr-06	6.7	6.6	6.4	
Oct-06	6.4	6.9	6.9	

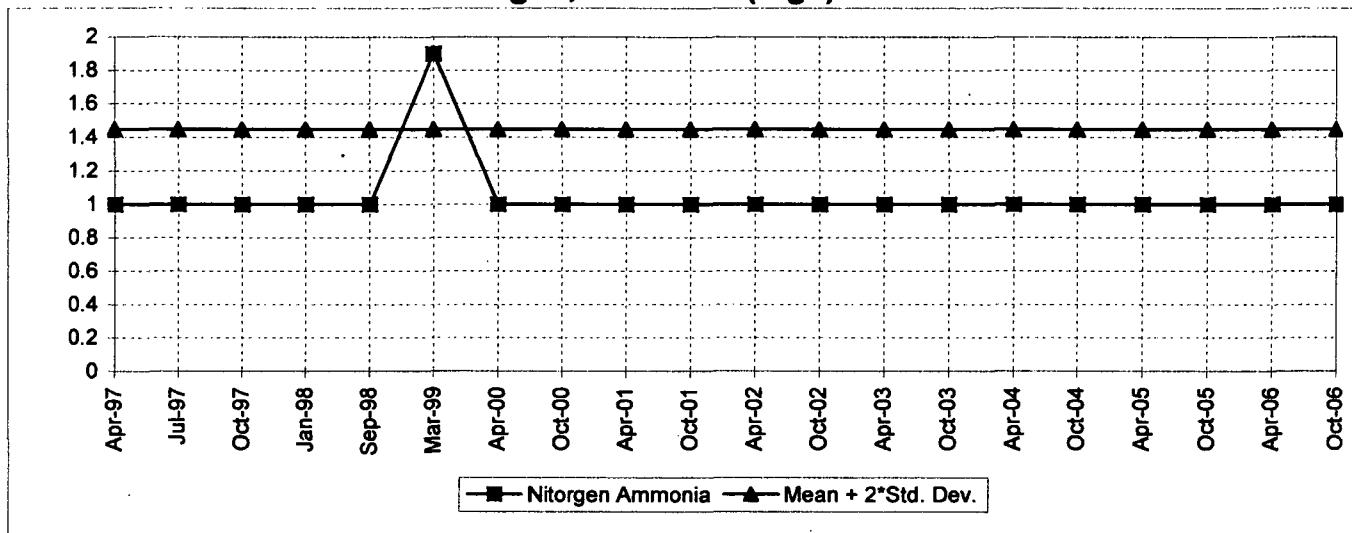
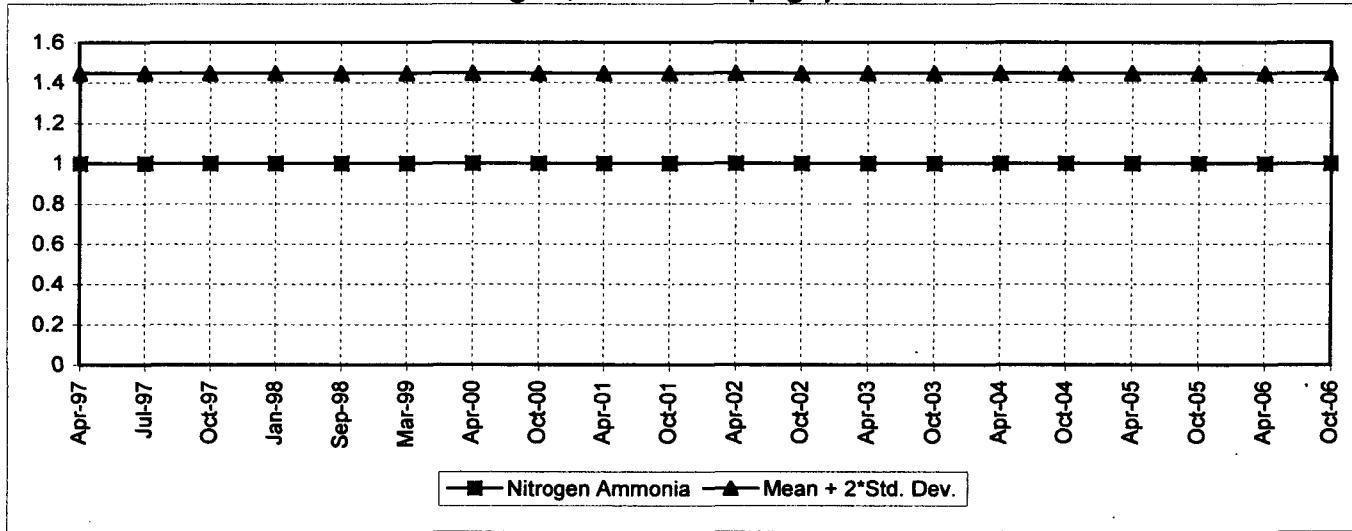
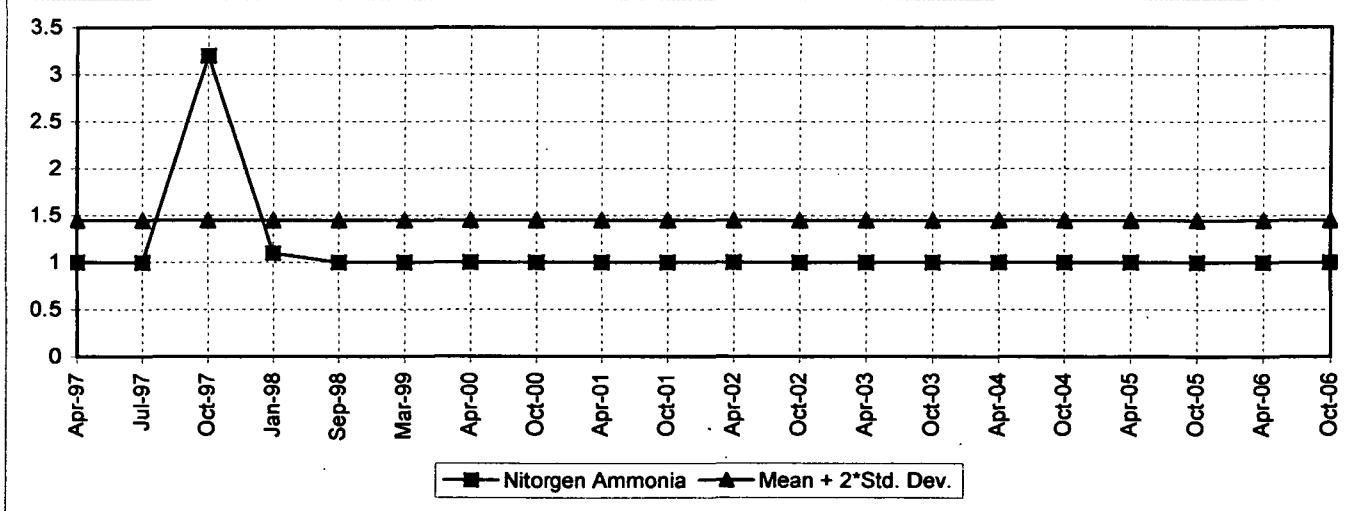
Upgradient Mean + 2(Standard Deviation) = **8.14** Upper Action Level = **8.5 fSMCL**
 Upgradient Mean - 2(Standard Deviation) = **5.39** Lower Action Level = **6.5 fSMCL**

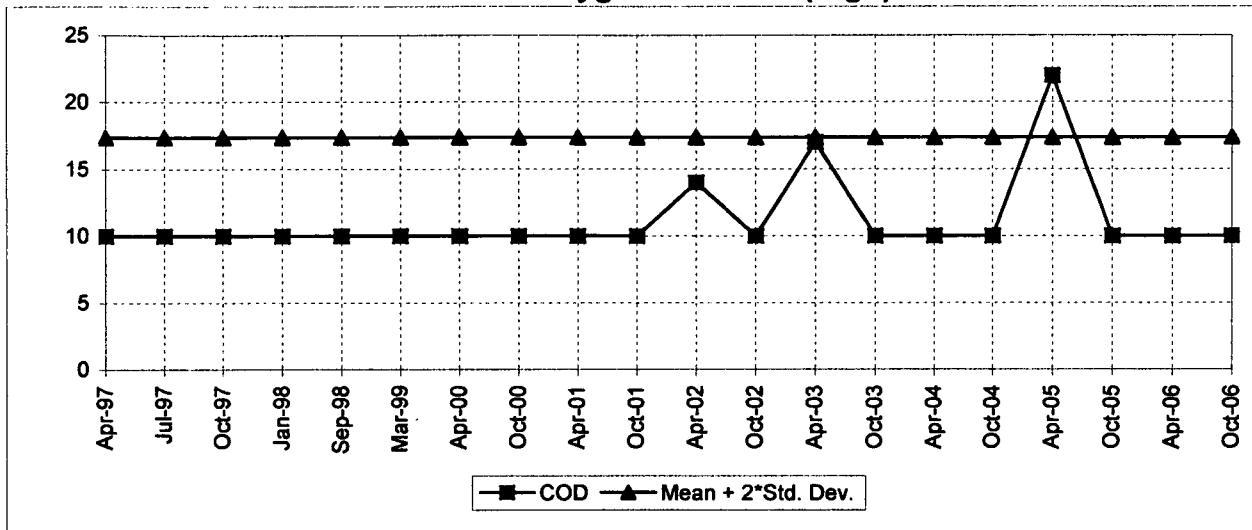
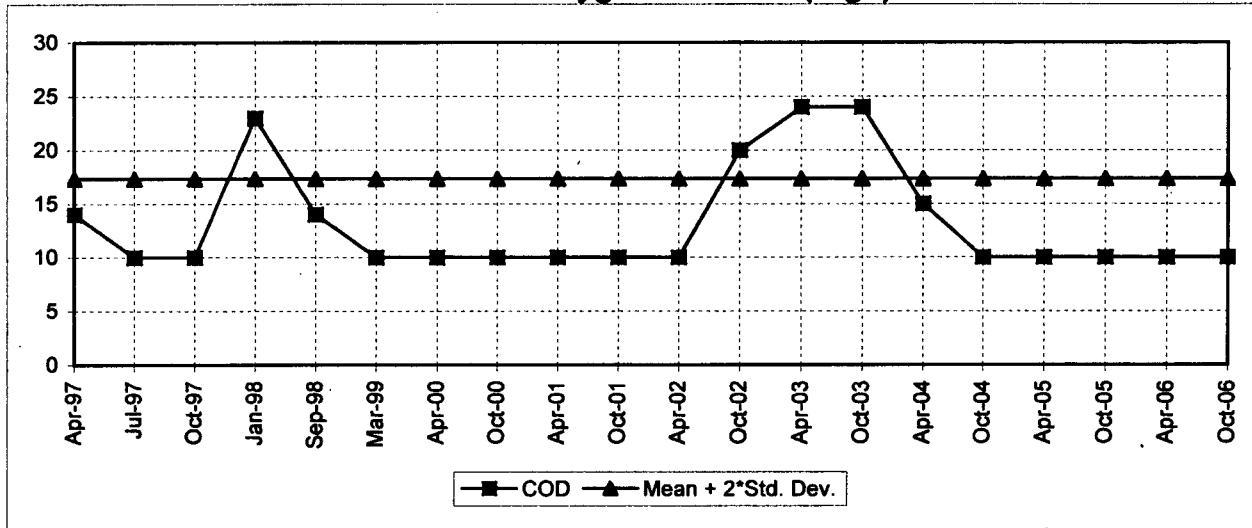
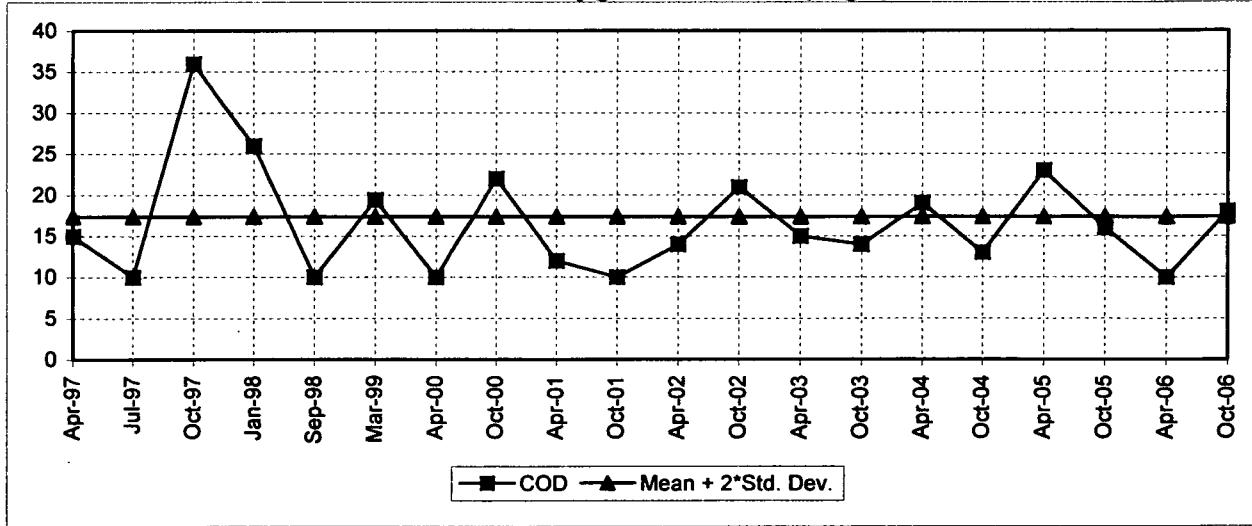
Temperature (C)

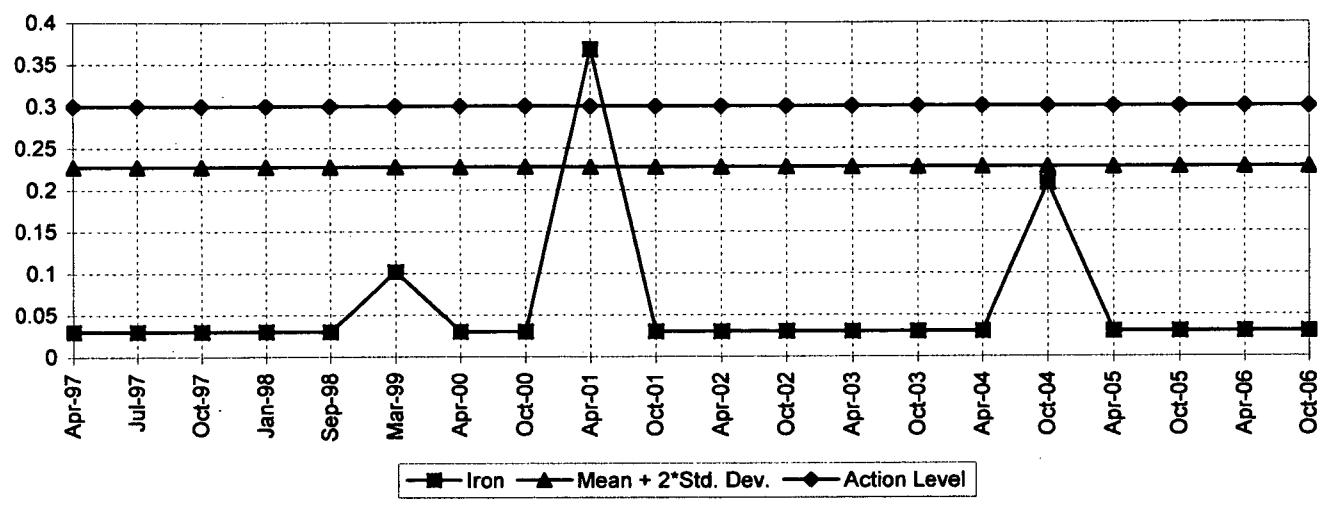
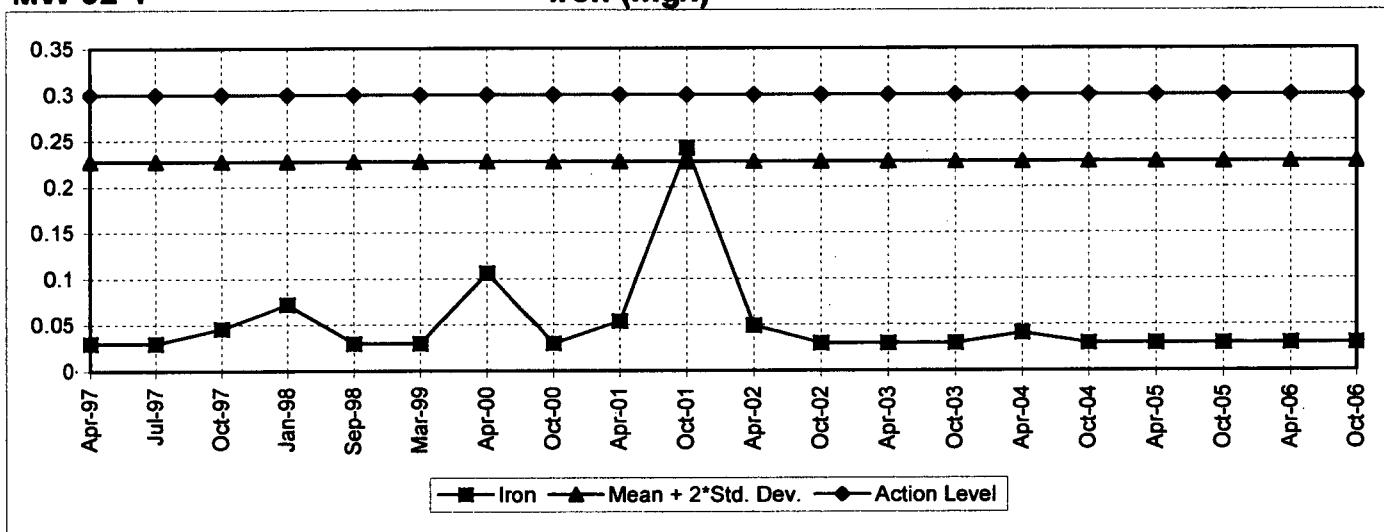
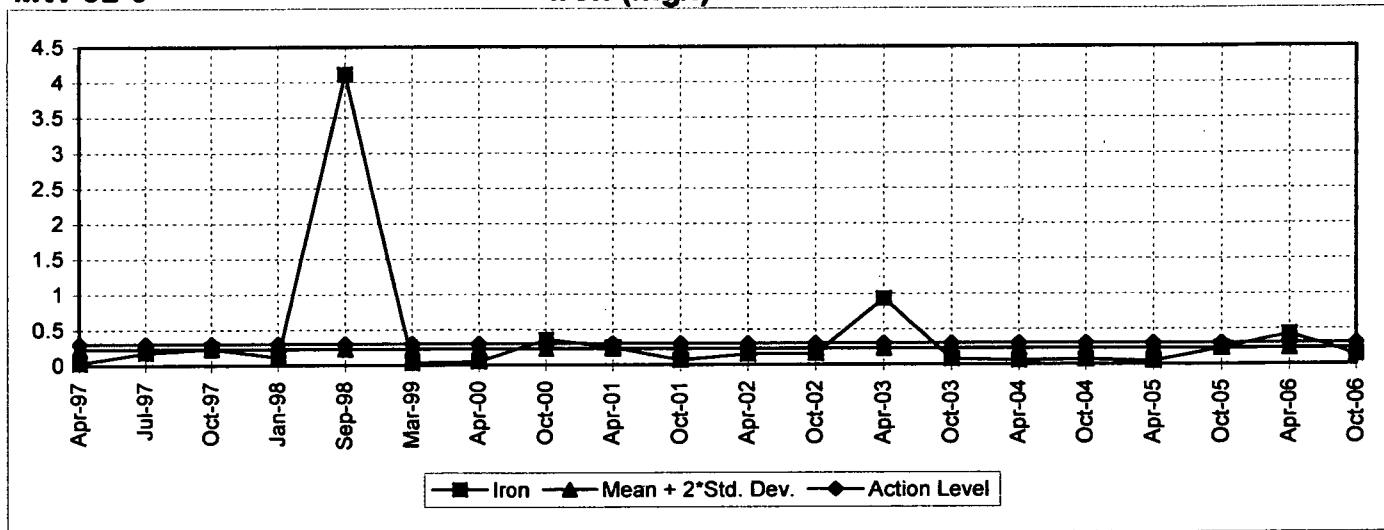
Date	<u>Upgradient</u>	<u>Downgradient</u>	
	MW-92-1	MW-92-4	MW-92-6
Apr-97	11.70	13.00	12.00
Jul-97	16.70	21.10	20.00
Oct-97	13.00	10.00	12.00
Jan-98	10.00	10.00	11.00
Sep-98	15.00	14.40	15.00
Mar-99	11.70	13.33	13.33
Apr-00	12.77	13.88	13.88
Oct-00	15.55	13.88	14.44
Apr-01	12.22	13.33	13.33
Oct-01	13.88	12.77	12.22
Apr-02	12.78	12.22	12.22
Oct-02	13.33	13.33	13.88
Apr-03	12.77	13.33	13.88
Oct-03	13.88	13.88	13.33
Apr-04	11.11	11.67	12.22
Oct-04	12.78	12.78	12.78
Apr-05	11.66	12.77	12.77
Oct-05	13.88	12.77	12.77
Apr-06	12.78	12.78	13.33
Oct-06	13.33	12.78	12.78

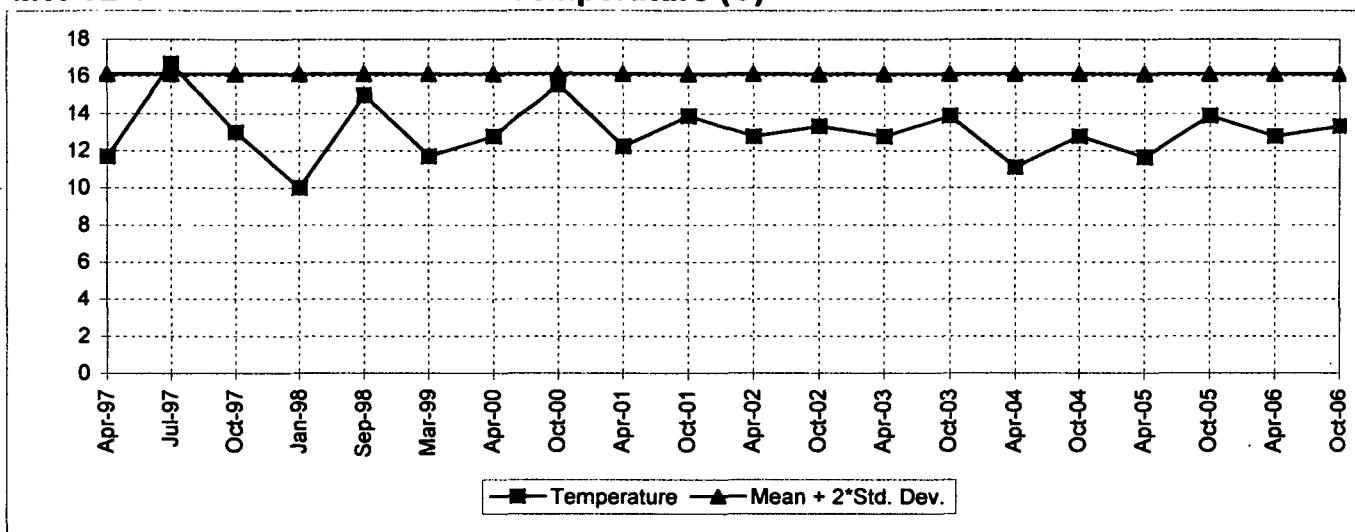
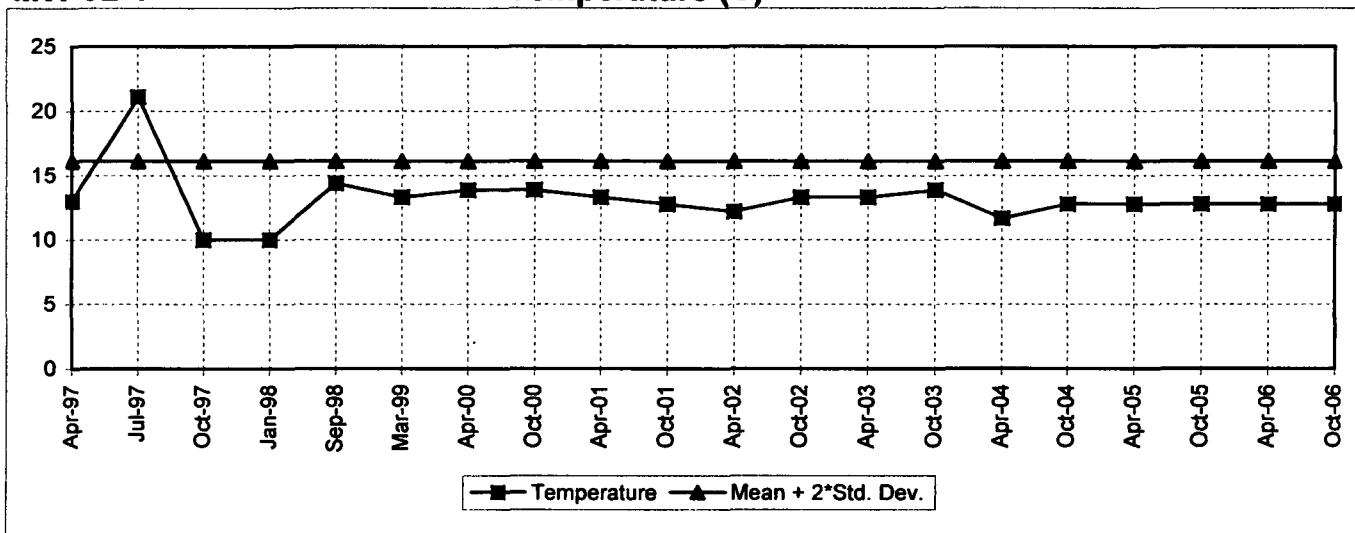
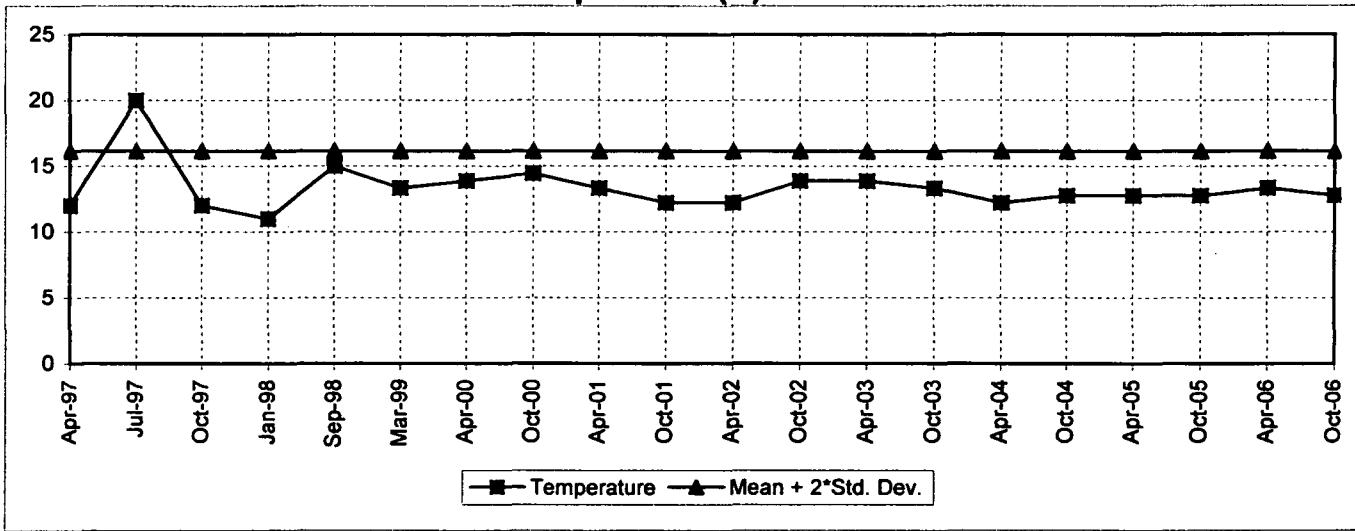
Upgradient Mean + 2(Standard Deviation) = **16.13** Action Level = None

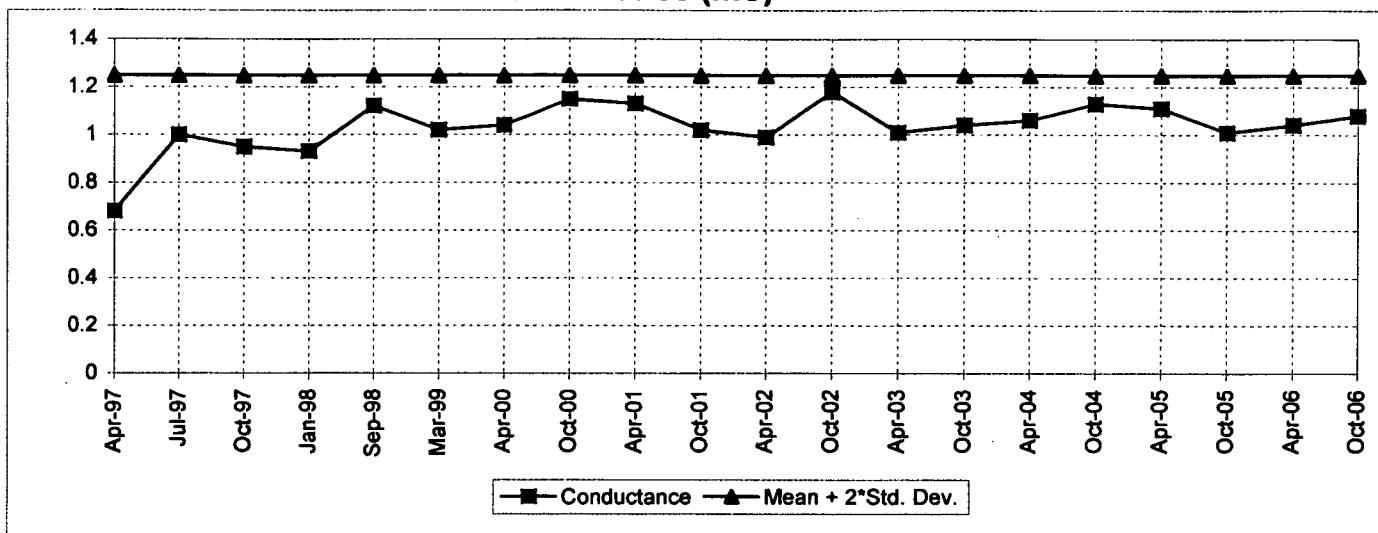
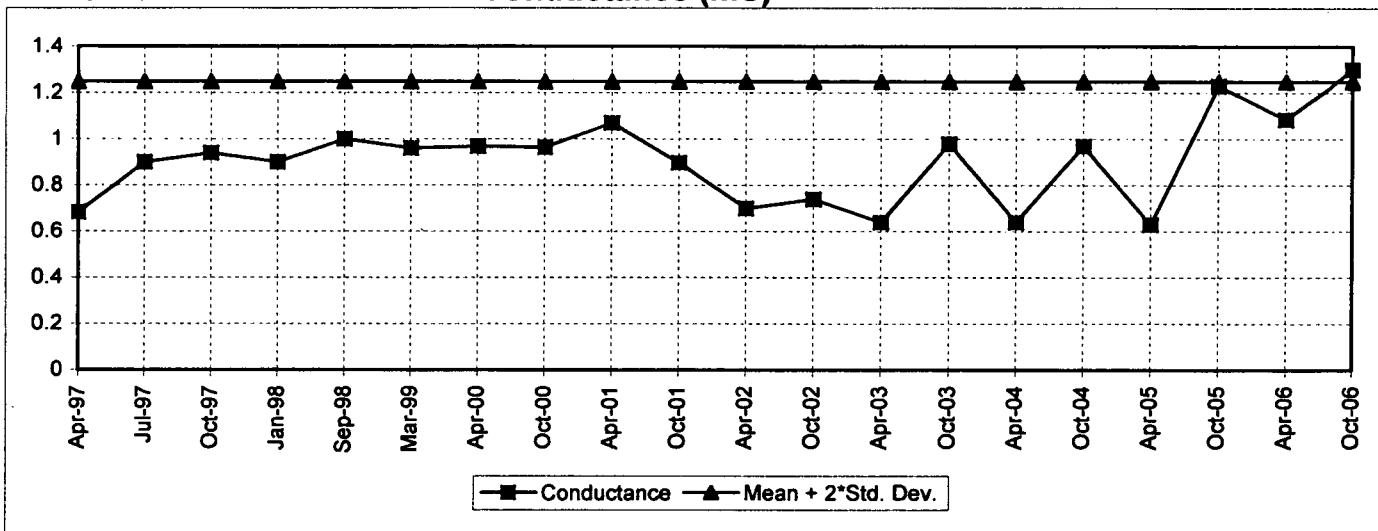
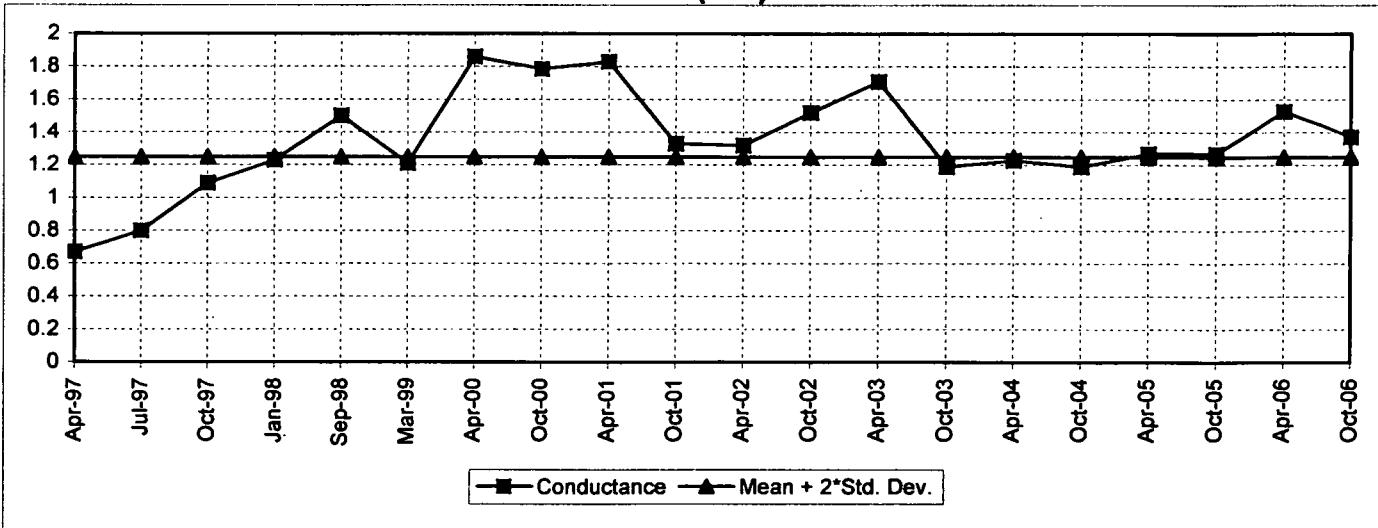
MW-92-1**Chloride (mg/l)****MW-92-4****Chloride (mg/l)****MW-92-6****Chloride (mg/l)**

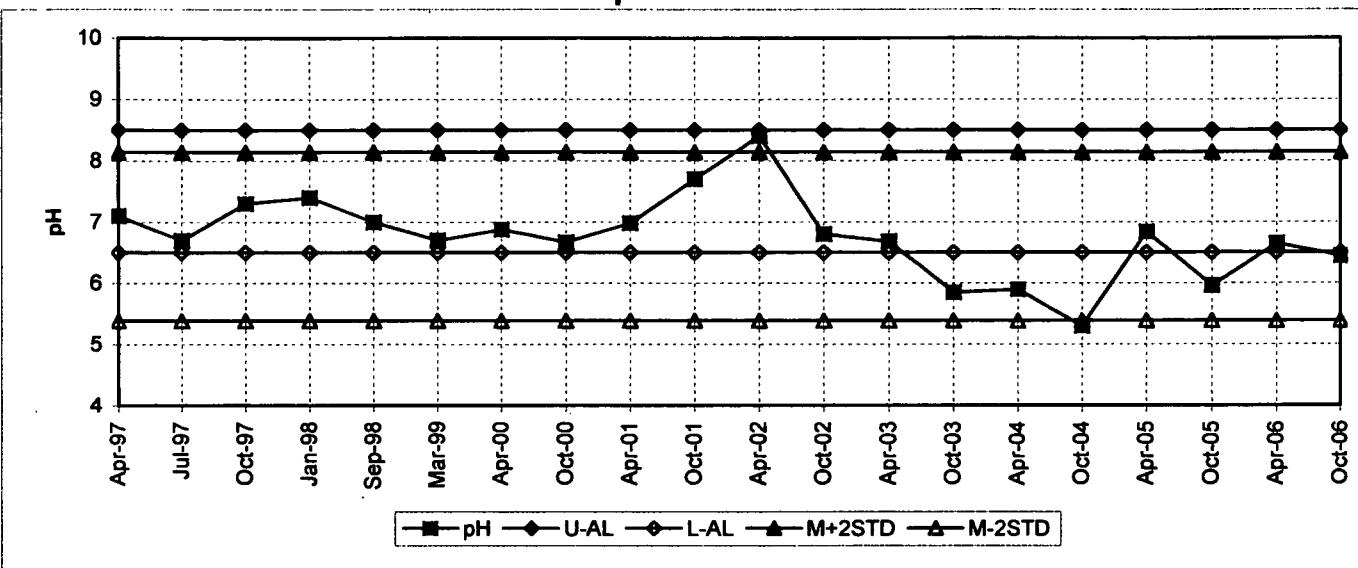
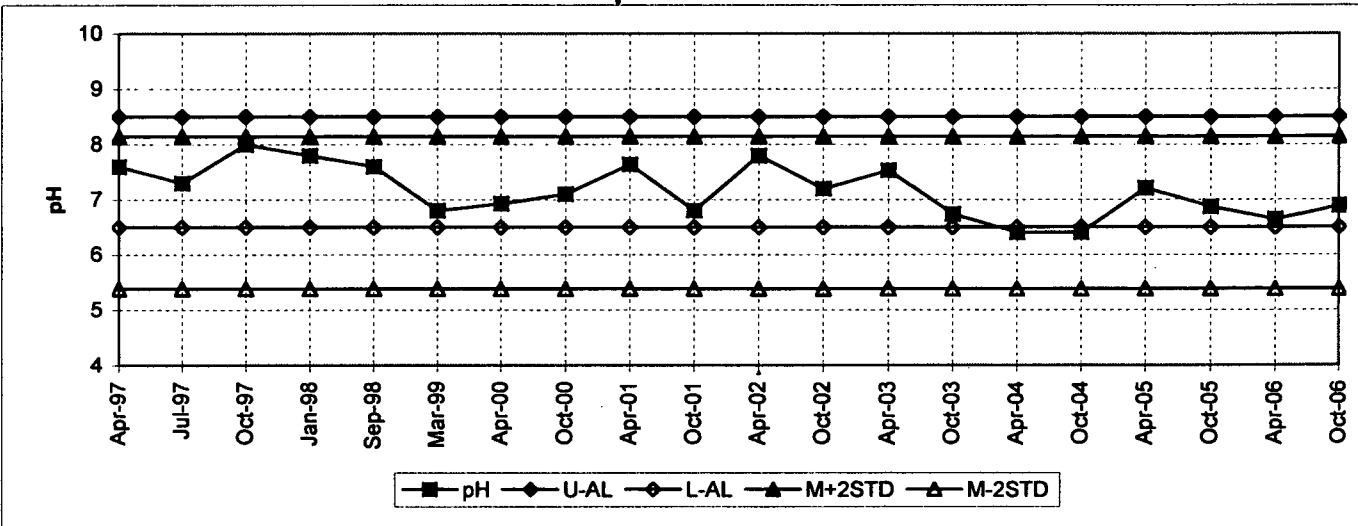
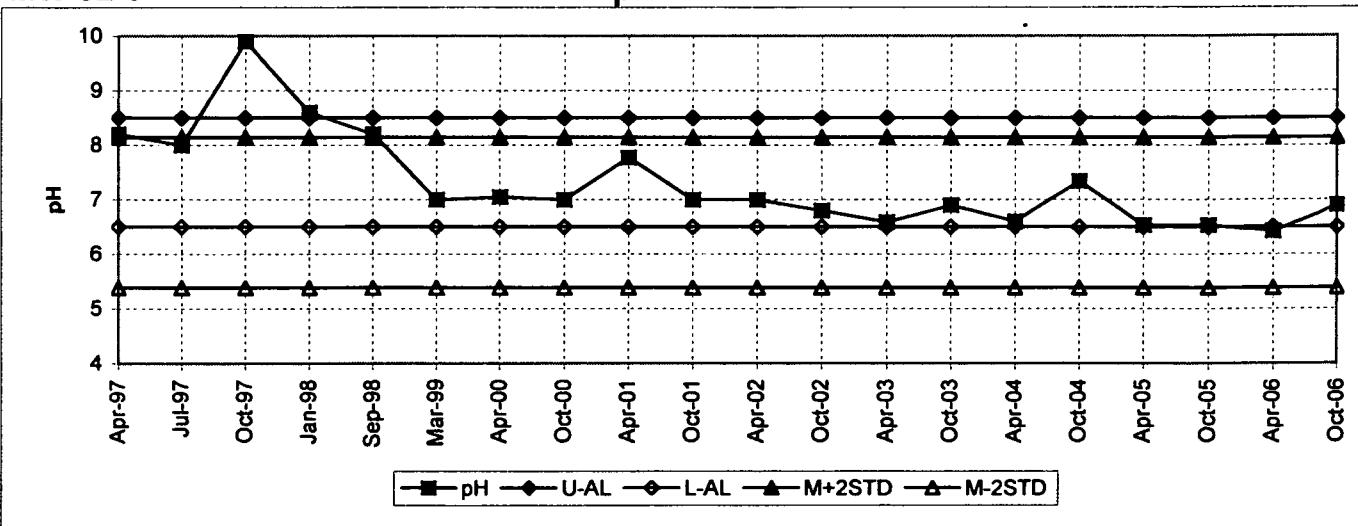
MW-92-1**Nitrogen, Ammonia (mg/l)****MW-92-4****Nitrogen, Ammonia (mg/l)****MW-92-6****Nitrogen, Ammonia (mg/l)**

MW-92-1**Chemical Oxygen Demand (mg/l)****MW-92-4****Chemical Oxygen Demand (mg/l)****MW-92-6****Chemical Oxygen Demand (mg/l)**

MW-92-1**Iron (mg/l)****MW-92-4****Iron (mg/l)****MW-92-6****Iron (mg/l)**

MW-92-1**Temperature (C)****MW-92-4****Temperature (C)****MW-92-6****Temperature (C)**

MW-92-1**Conductance (mS)****MW-92-4****Conductance (mS)****MW-92-6****Conductance (mS)**

MW-92-1**pH****MW-92-4****pH****MW-92-6****pH**

Lower Aquifer (Monitoring Wells are Deep) Sampling Result - 1997 to 2006

Arsenic, Dissolved (mg/L)

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-2		MW-92-5	MW-92-7
Apr-97	<0.001		<0.001	<0.001
Jul-97	<0.001		<0.001	<0.001
Oct-97	<0.001		<0.001	<0.001
Jan-98	0.001		<0.001	0.001
Mar-99	<0.001		<0.001	<0.001
Upgradient Mean + 2(Standard Deviation) =		0.0010	Action Level =	
				0.001 dNRL

Barium, Dissolved (mg/l)

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-2		MW-92-5	MW-92-7
Apr-97	0.139		0.090	0.150
Jul-97	0.101		0.073	0.088
Oct-97	0.113		0.090	0.120
Jan-98	0.145		0.104	0.167
Mar-99	0.112		0.19	0.164
Upgradient Mean + 2(Standard Deviation) =		0.1599	Action Level =	
				2 fHAL

Cadmium, Dissolved (mg/l)

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-2		MW-92-5	MW-92-7
Apr-97	0.002		<0.001	<0.001
Jul-97	0.001		0.002	<0.001
Oct-97	<0.001		<0.001	<0.001
Jan-98	<0.001		<0.001	<0.001
Mar-99	<0.001		<0.001	<0.001
Upgradient Mean + 2(Standard Deviation) =		0.0021	Action Level =	
				0.005 fHAL

Magnesium, Dissolved (mg/l)

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-2		MW-92-5	MW-92-7
Apr-97	48.5		49	57
Jul-97	48.1		47.6	32.5
Oct-97	46.8		46.8	43.8
Jan-98	49.0		50	61
Mar-99	41.6		47.4	55.7
Upgradient Mean + 2(Standard Deviation) =		52.8382	Action Level =	
				None

Zinc, Dissolved (mg/l)

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-2		MW-92-5	MW-92-7
Apr-97	<0.03		<0.03	0.03
Jul-97	<0.047		0.083	0.072
Oct-97	0.03		0.032	<0.03
Jan-98	<0.03		<0.03	<0.03
Mar-99	<0.03		<0.03	<0.03
Upgradient Mean + 2(Standard Deviation) =		0.0486	Action Level =	
				2 fHAL

Chloride (mg/l)

Date	<u>Upgradient</u>	<u>Downgradient</u>	
	MW-92-2	MW-92-5	MW-92-7
Apr-97	79	69	51
Jul-97	77	75	98
Oct-97	68	78	72
Jan-98	82	85	50
Sep-98	81.2	75	54
Mar-99	80	64	57
Apr-00	27	58	41
Oct-00	51	63	46
Apr-01	68	68	39
Oct-01	69	74	52
Apr-02	62	61	52
Oct-02	71	69	58
Apr-03	36	71	58
Oct-03	70	66	113
Apr-04	73	68	53
Oct-04	72	68	49
Apr-05	40	56	61
Oct-05	50	52	55
Apr-06	46	57	58
Oct-06	48	56	56

Upgradient Mean + 2(Standard Deviation) = **95.57** Action Level = **250 fSMCL****Nitrogen, Ammonia (mg/l)**

Date	<u>Upgradient</u>	<u>Downgradient</u>	
	MW-92-2	MW-92-5	MW-92-7
Apr-97	<1	<1	<1
Jul-97	<1	<1	<1
Oct-97	<1	<1	<1
Jan-98	<1	<1	<1
Sep-98	<1	<1	<1
Mar-99	<1	<1	<1
Apr-00	<1	<1	<1
Oct-00	<1	<1	<1
Apr-01	<1	<1	<1
Oct-01	<1	<1	<1
Apr-02	<1	<1	<1
Oct-02	<1	<1	<1
Apr-03	<1	<1	<1
Oct-03	<1	<1	<1
Apr-04	<1	<1	<1
Oct-04	<1	<1	<1
Apr-05	<1	<1	<1
Oct-05	<1	<1	<1
Apr-06	<1	<1	<1
Oct-06	<1	<1	<1

Upgradient Mean + 2(Standard Deviation) = **1.00** Action Level = **30 fSMCL**

Iron, Dissolved (mg/l)

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-2		MW-92-5	MW-92-7
Apr-97	8.72		8.14	7.54
Jul-97	0.12		<0.03	0.04
Oct-97	2.76		6.65	0.06
Jan-98	9.70		9.06	8.27
Sep-98	8.35		8.50	4.12
Mar-99	8.37		7.86	6.52
Apr-00	0.56		3.20	3.23
Oct-00	<0.03		7.32	6.82
Apr-01	7.06		7.62	7.24
Oct-01	8.06		7.72	8.21
Apr-02	7.62		7.13	6.33
Oct-02	6.33		3.10	5.24
Apr-03	<0.03		0.82	6.24
Oct-03	6.29		<0.030	5.96
Apr-04	7.67		5.95	1.25
Oct-04	7.21		<0.03	6.33
Apr-05	3.82		5.78	5.05
Oct-05	7.05		6.07	5.50
Apr-06	<0.03		0.05	6.51
Oct-06	<0.03		<0.03	6.54

Upgradient Mean + 2(Standard Deviation) = **12.21** Action Level = **0.3 f action level**

Chemical Oxygen Demand (mg/l)

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-2		MW-92-5	MW-92-7
Apr-97	<10		<10	19
Jul-97	<10		<10	<10
Oct-97	<10		<10	<10
Jan-98	<10		<10	<10
Sep-98	<10		<10	<10
Mar-99	<10		<10	<10
Apr-00	<10		<10	<10
Oct-00	<10		<10	<10
Apr-01	<10		<10	<10
Oct-01	<10		<10	14
Apr-02	<10		<10	11
Oct-02	11		11	14
Apr-03	18		<10	25
Oct-03	<10		<10	12
Apr-04	17		16	20
Oct-04	<10		<10	<10
Apr-05	16		15	28
Oct-05	14		16	11
Apr-06	<10		<10	<10
Oct-06	10		<10	17

Upgradient Mean + 2(Standard Deviation) = **16.58** Action Level = **None**

Conductance (mS)

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-2		MW-92-5	MW-92-7
Apr-97	0.83		0.85	0.88
Jul-97	0.90		1.10	0.80
Oct-97	1.12		1.16	1.21
Jan-98	1.15		1.17	1.26
Sep-98	1.21		1.27	1.50
Mar-99	1.22		1.36	1.43
Apr-00	1.00		1.19	1.28
Oct-00	1.18		1.18	1.24
Apr-01	1.17		1.19	1.22
Oct-01	1.20		1.21	1.26
Apr-02	1.08		1.05	1.09
Oct-02	1.18		1.20	1.35
Apr-03	1.05		1.16	1.27
Oct-03	1.16		1.12	1.22
Apr-04	1.19		1.19	1.32
Oct-04	1.04		0.99	1.08
Apr-05	1.15		1.21	1.15
Oct-05	1.11		1.10	1.15
Apr-06	1.06		1.16	1.15
Oct-06	1.05		1.14	1.16

Upgradient Mean + 2(Standard Deviation) = **1.31** Action Level = None

pH

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-2		MW-92-5	MW-92-7
Apr-97	7.5		7.3	6.9
Jul-97	7.6		7.2	6.9
Oct-97	7.4		7.7	7.6
Jan-98	7.5		7.2	7.2
Sep-98	7.2		7.2	7.2
Mar-99	6.4		6.8	6.7
Apr-00	7.1		6.8	6.6
Oct-00	6.7		6.8	6.8
Apr-01	7.1		7.4	7.3
Oct-01	7.6		6.7	7.3
Apr-02	8.7		7.3	6.2
Oct-02	6.8		6.8	6.7
Apr-03	6.7		6.9	6.9
Oct-03	6.2		6.5	6.6
Apr-04	6.2		6.3	6.2
Oct-04	5.6		6.8	6.7
Apr-05	6.4		6.3	6.5
Oct-05	6.3		6.3	6.2
Apr-06	6.6		6.3	6.6
Oct-06	6.9		6.8	7.1

Upgradient Mean + 2(Standard Deviation) = **8.3101** Upper Action Level = **8.5 fSMCL**
 Upgradient Mean - 2(Standard Deviation) = **5.5389** Lower Action Level = **6.5 fSMCL**

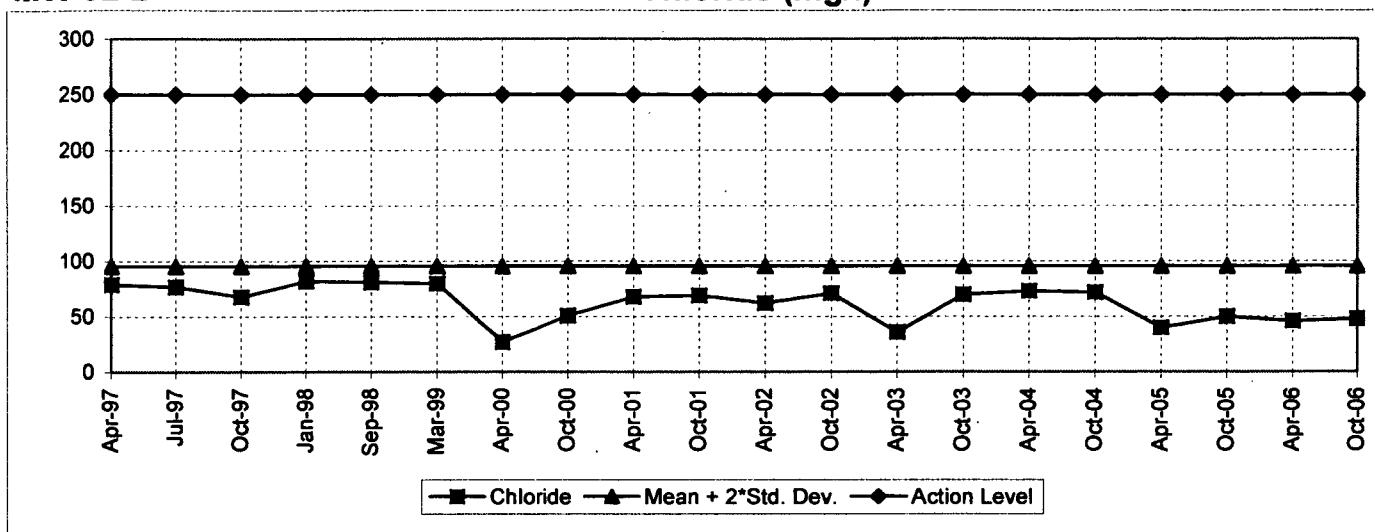
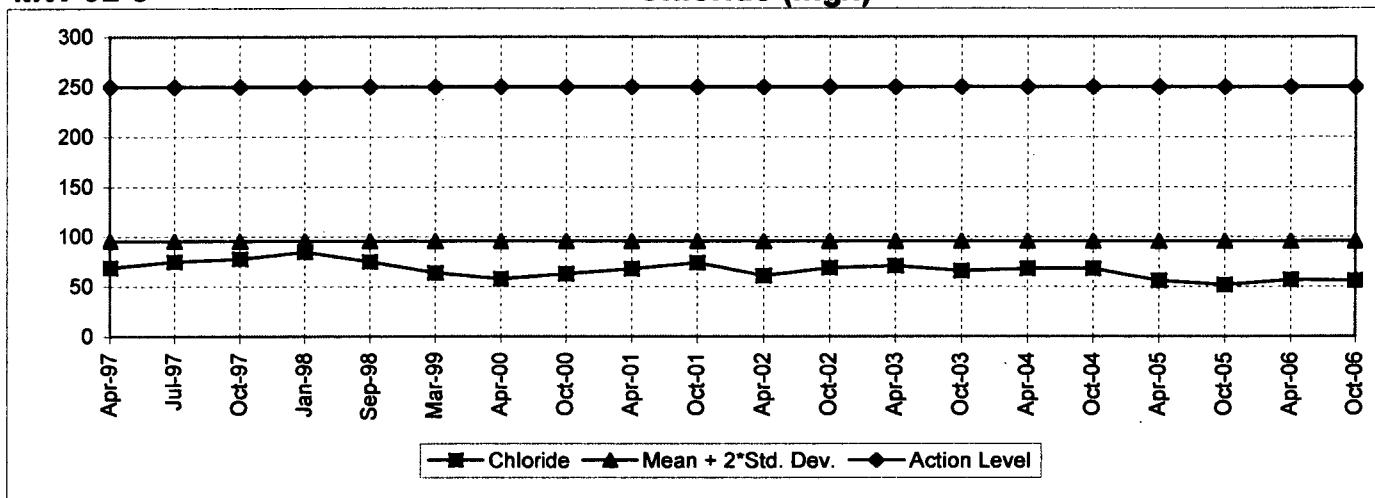
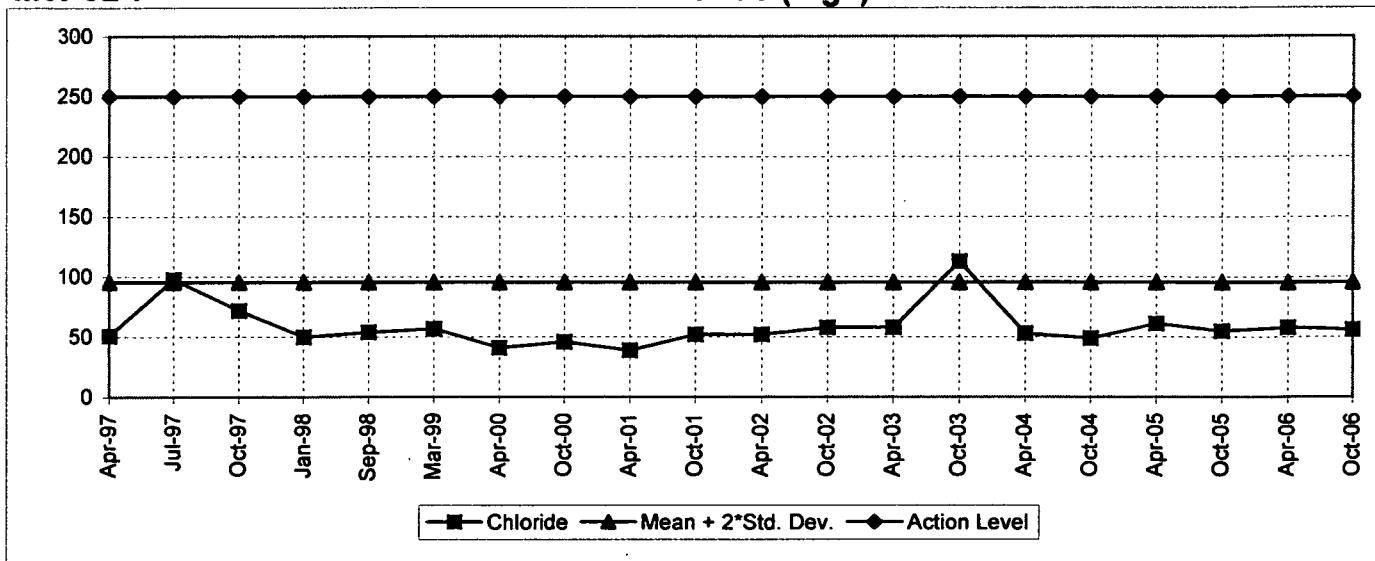
Temperature (C)

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-2		MW-92-5	MW-92-7
Apr-97	11.70		13.00	12.00
Jul-97	17.80		18.30	17.80
Oct-97	12.00		10.00	10.00
Jan-98	11.00		8.00	11.00
Sep-98	13.88		13.33	13.33
Mar-99	12.22		12.77	12.22
Apr-00	12.77		14.44	13.88
Oct-00	15.55		13.88	14.44
Apr-01	12.77		13.33	13.33
Oct-01	12.77		12.77	13.33
Apr-02	12.77		12.22	12.22
Oct-02	13.33		13.33	13.33
Apr-03	13.88		13.88	13.33
Oct-03	13.33		13.33	13.33
Apr-04	12.22		11.67	12.22
Oct-04	13.89		12.78	12.78
Apr-05	11.67		12.78	12.78
Oct-05	12.78		12.78	12.78
Apr-06	12.78		12.78	13.33
Oct-06	12.78		12.78	12.78

Upgradient Mean + 2(Standard Deviation) = **16.0665**

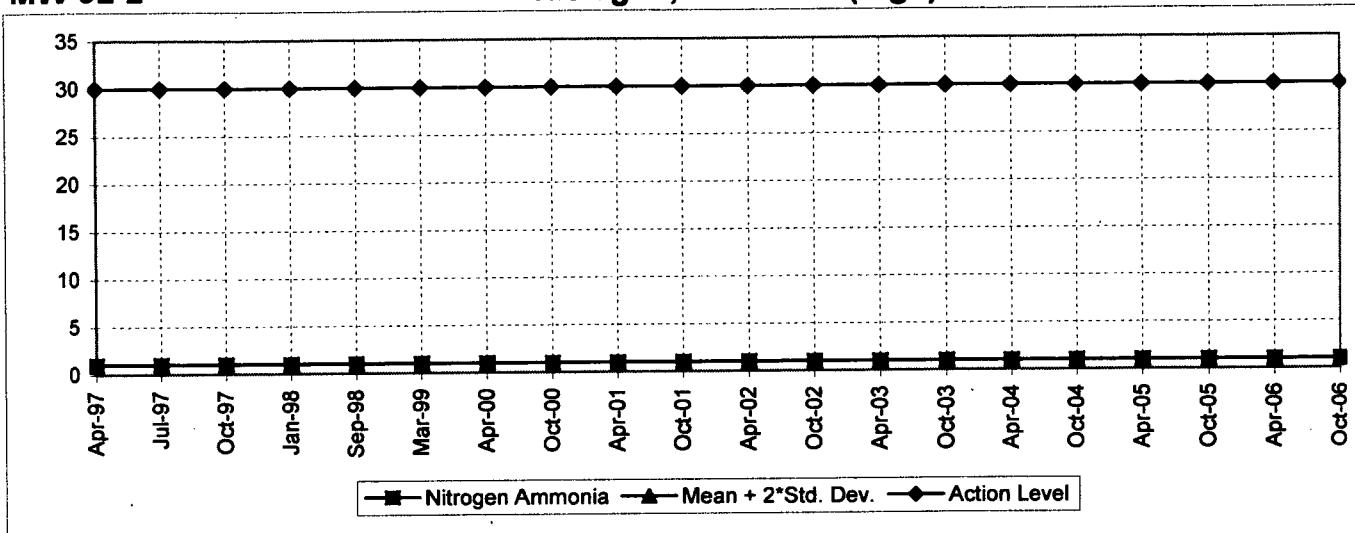
Action Level =

None

MW-92-2**Chloride (mg/l)****MW-92-5****Chloride (mg/l)****MW-92-7****Chloride (mg/l)**

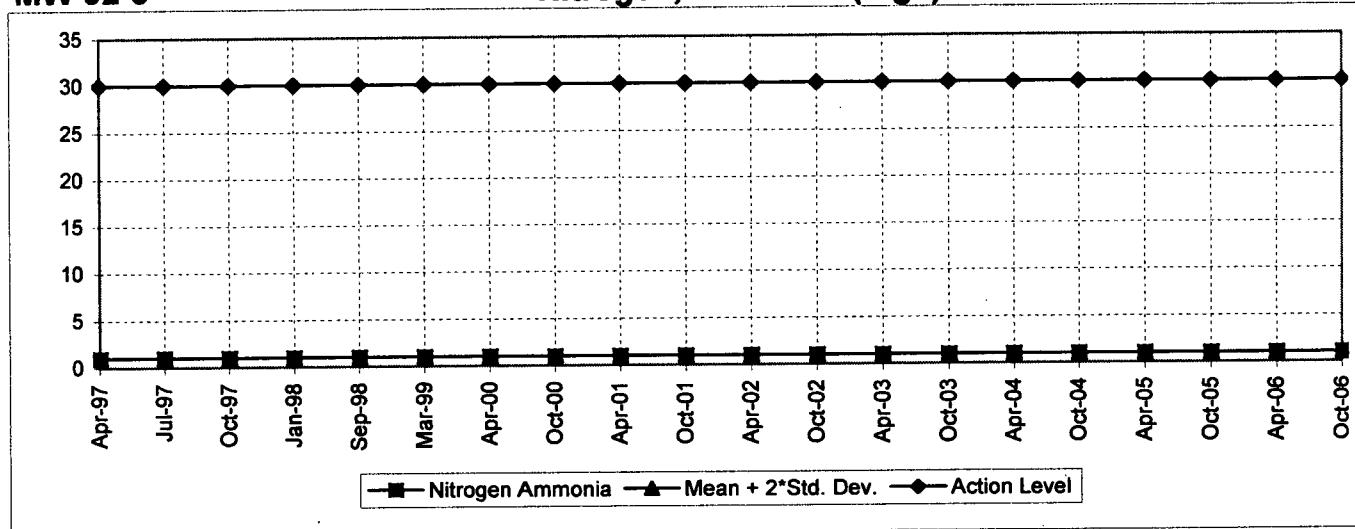
MW-92-2

Nitrogen, Ammonia (mg/l)



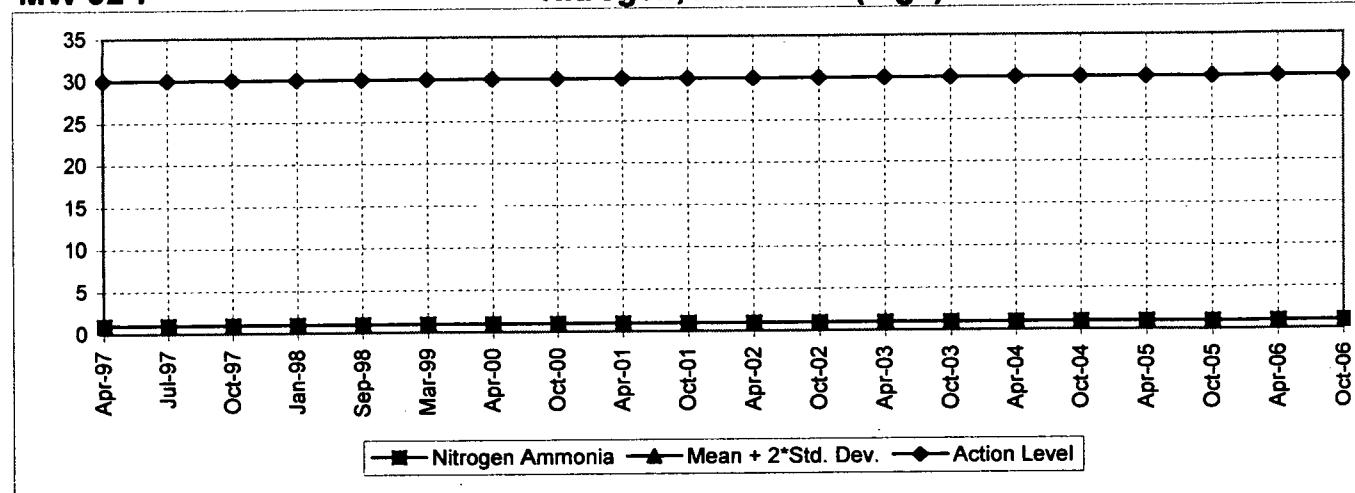
MW-92-5

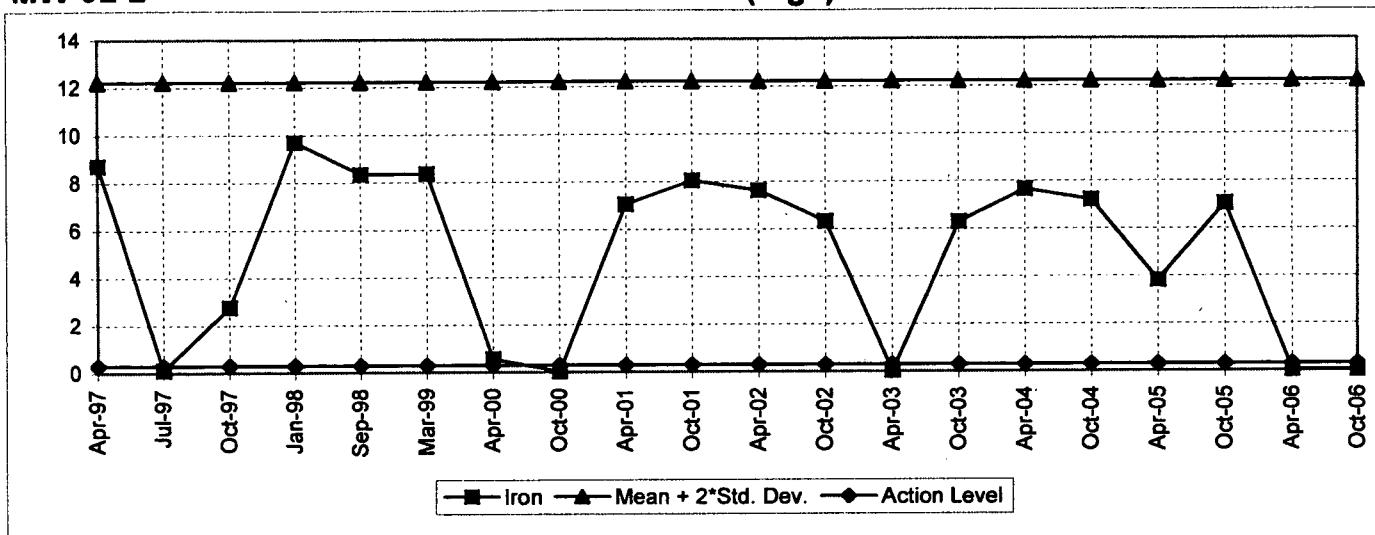
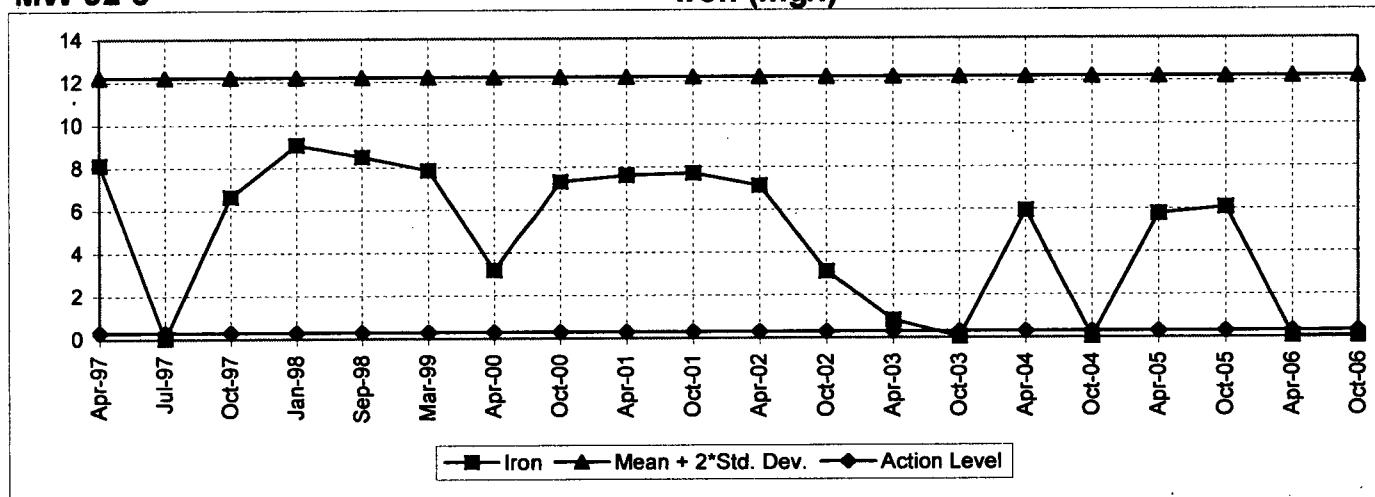
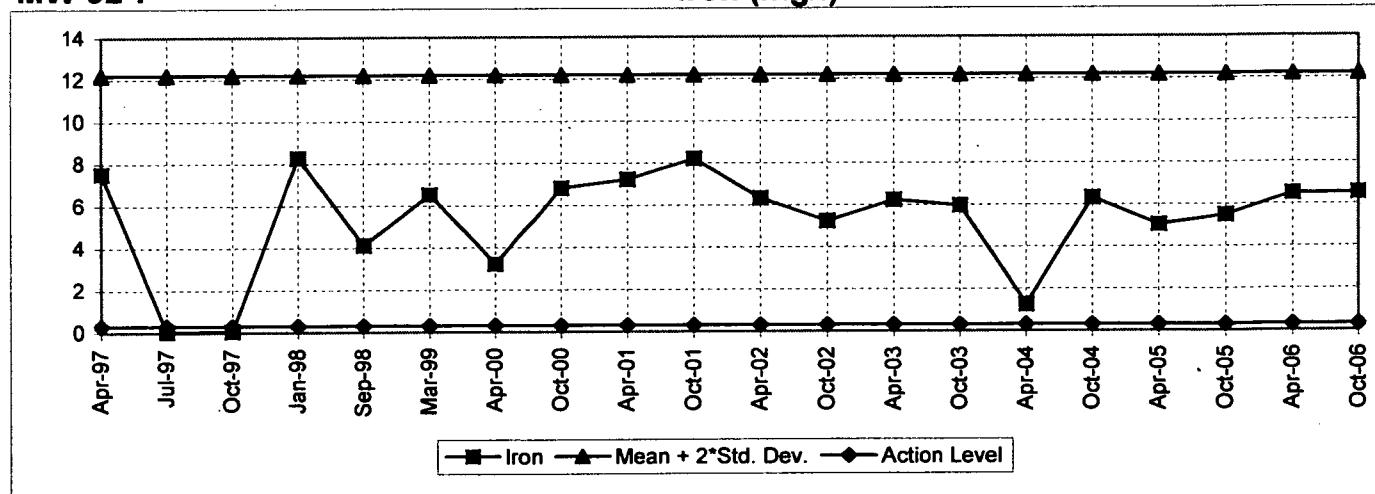
Nitrogen, Ammonia (mg/l)



MW-92-7

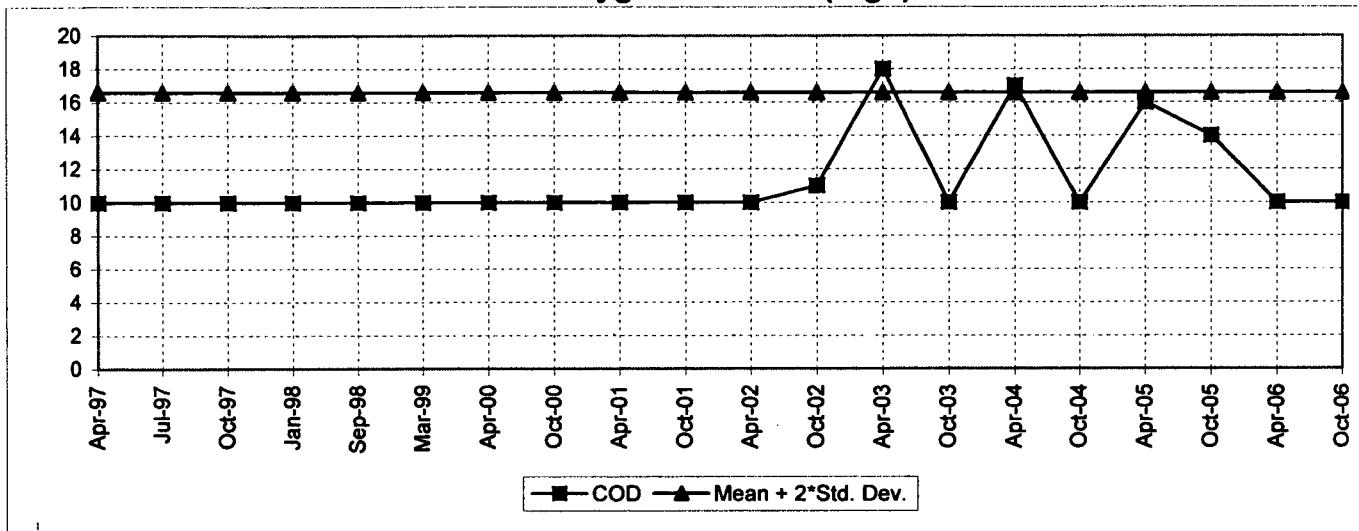
Nitrogen, Ammonia (mg/l)



MW-92-2**Iron (mg/l)****MW-92-5****Iron (mg/l)****MW-92-7****Iron (mg/l)**

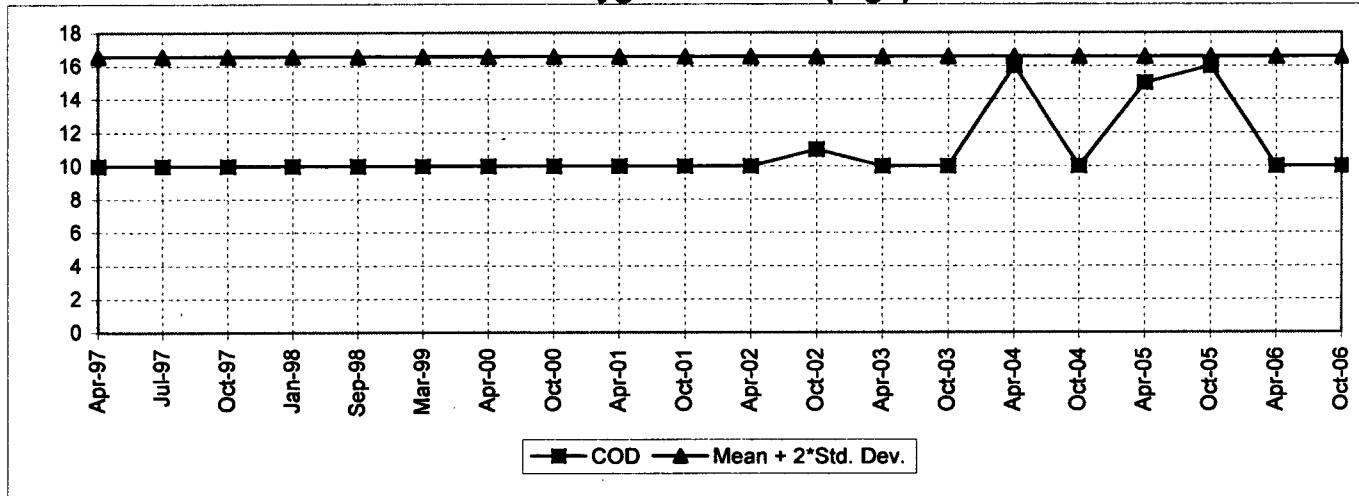
MW-92-2

Chemical Oxygen Demand (mg/l)



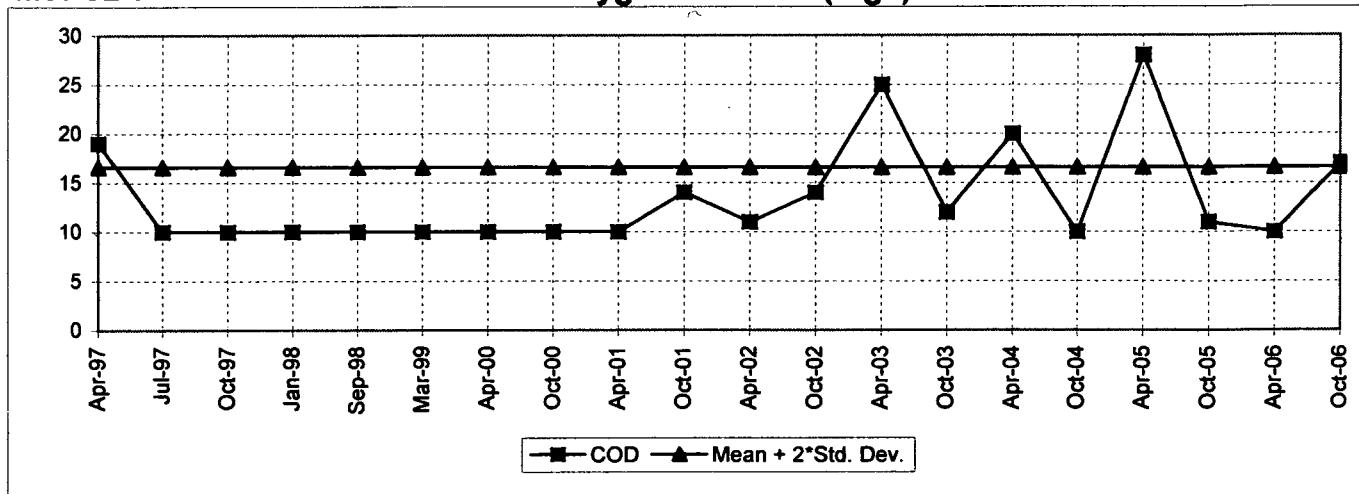
MW-92-5

Chemical Oxygen Demand (mg/l)



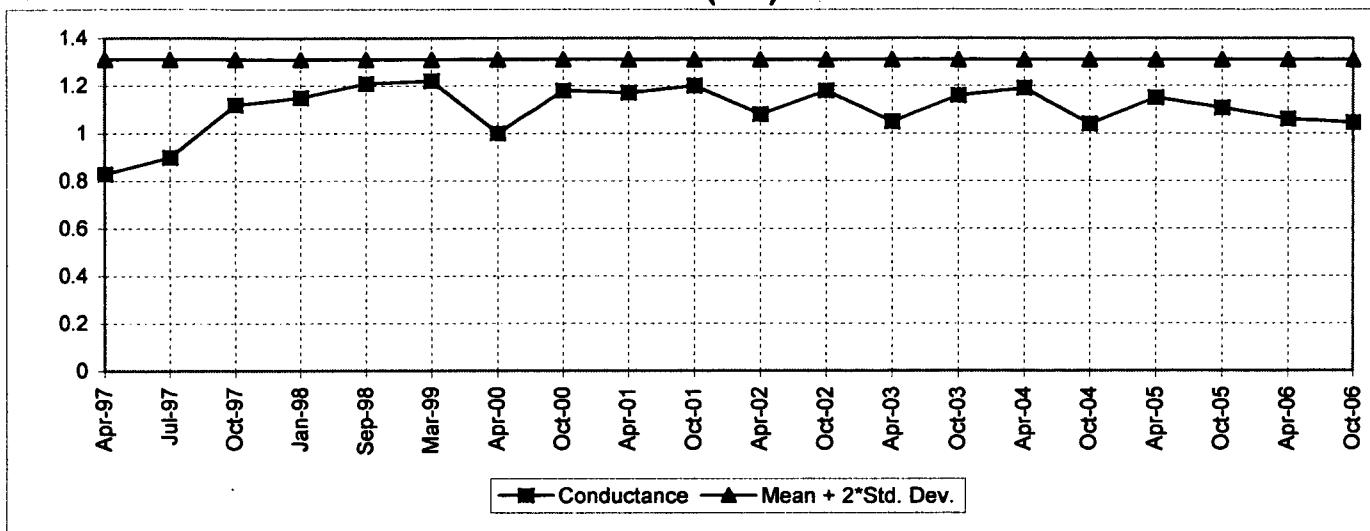
MW-92-7

Chemical Oxygen Demand (mg/l)



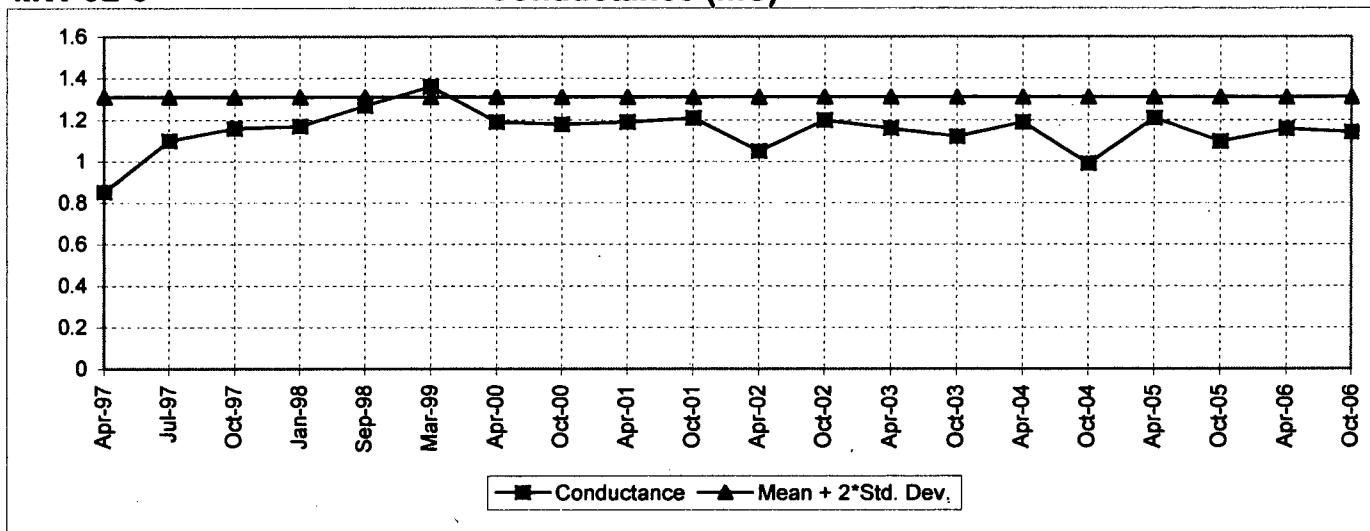
MW-92-2

Conductance (mS)



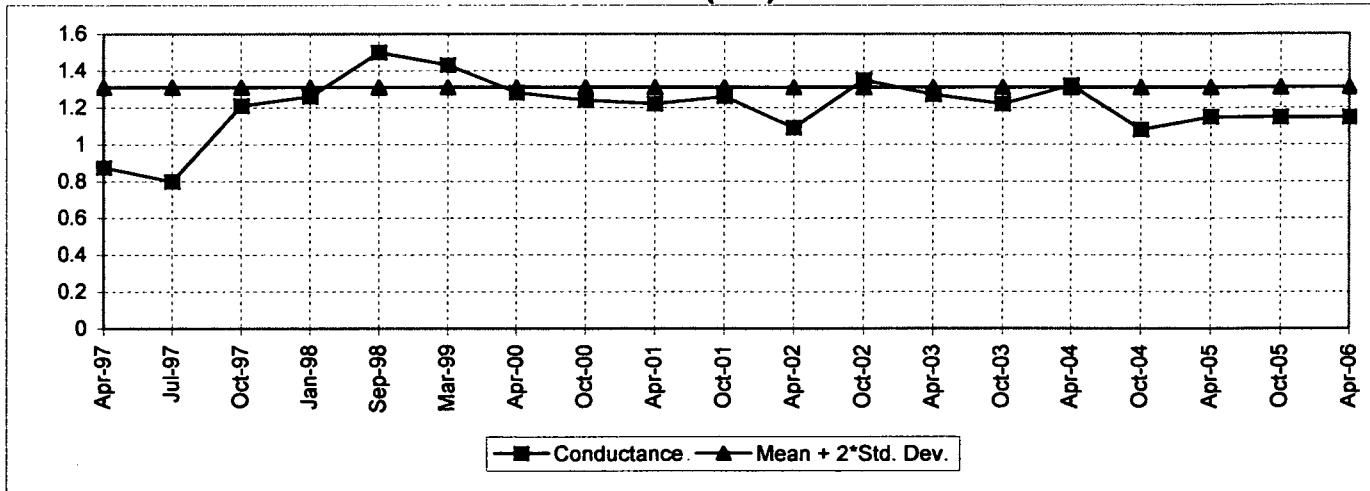
MW-92-5

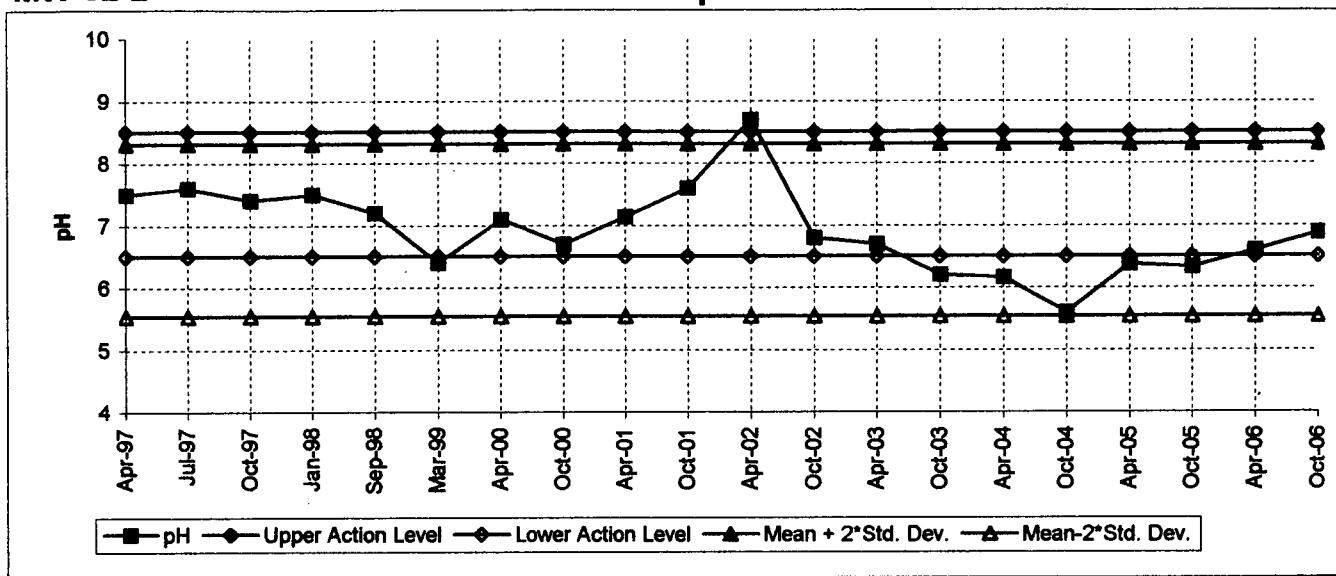
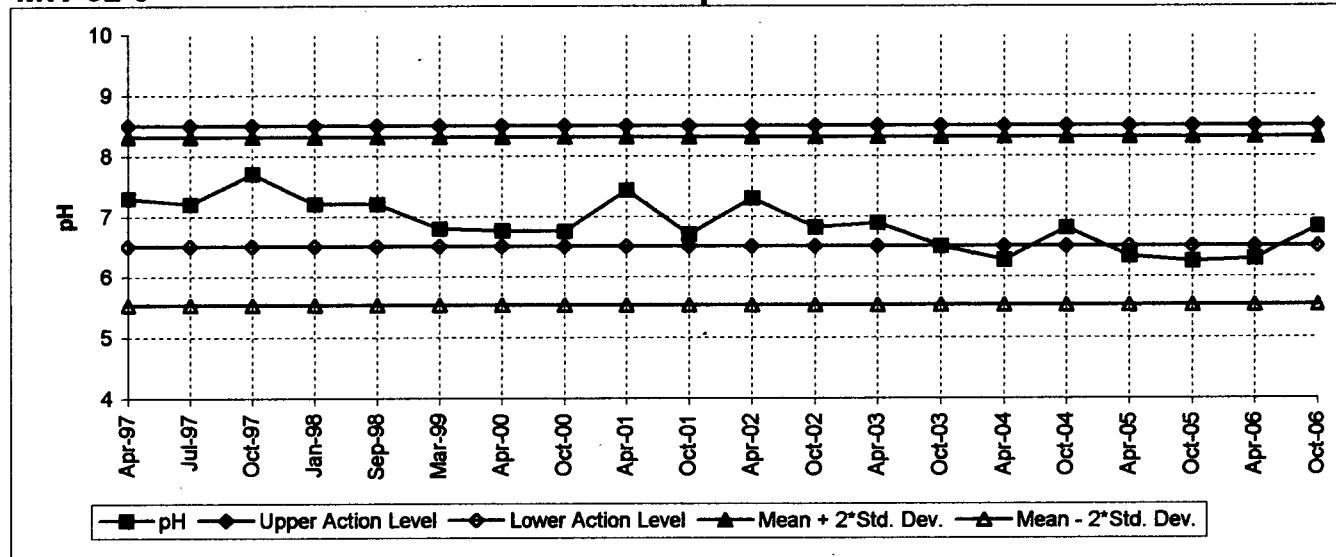
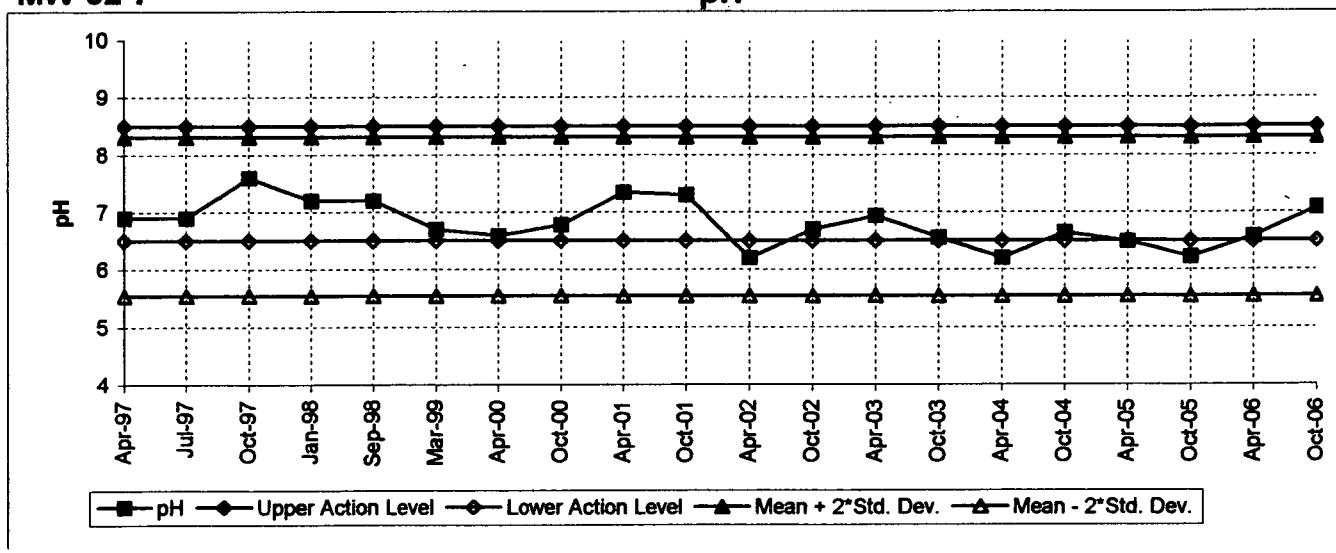
Conductance (mS)



MW-92-7

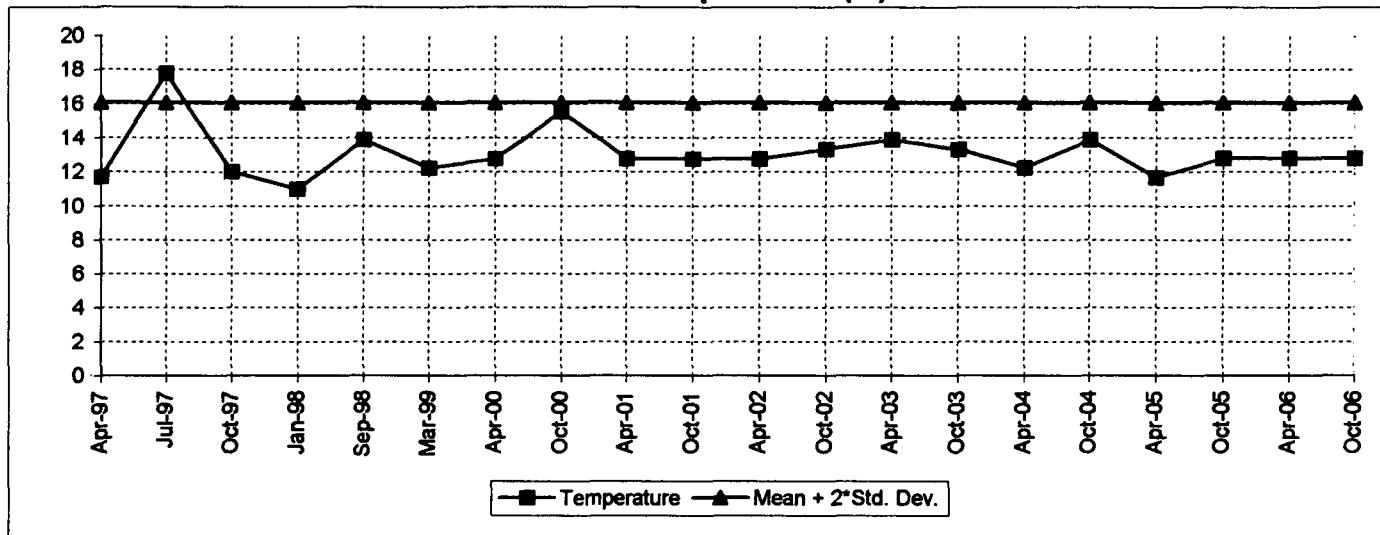
Conductance (mS)



MW-92-2**MW-92-5****MW-92-7**

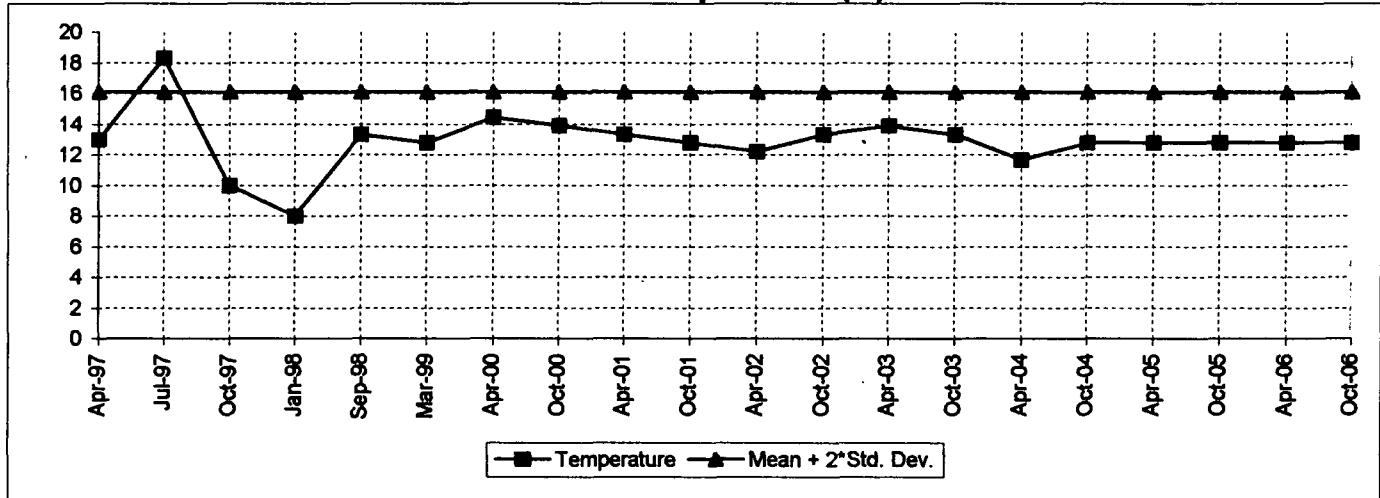
MW-92-2

Temperature (C)



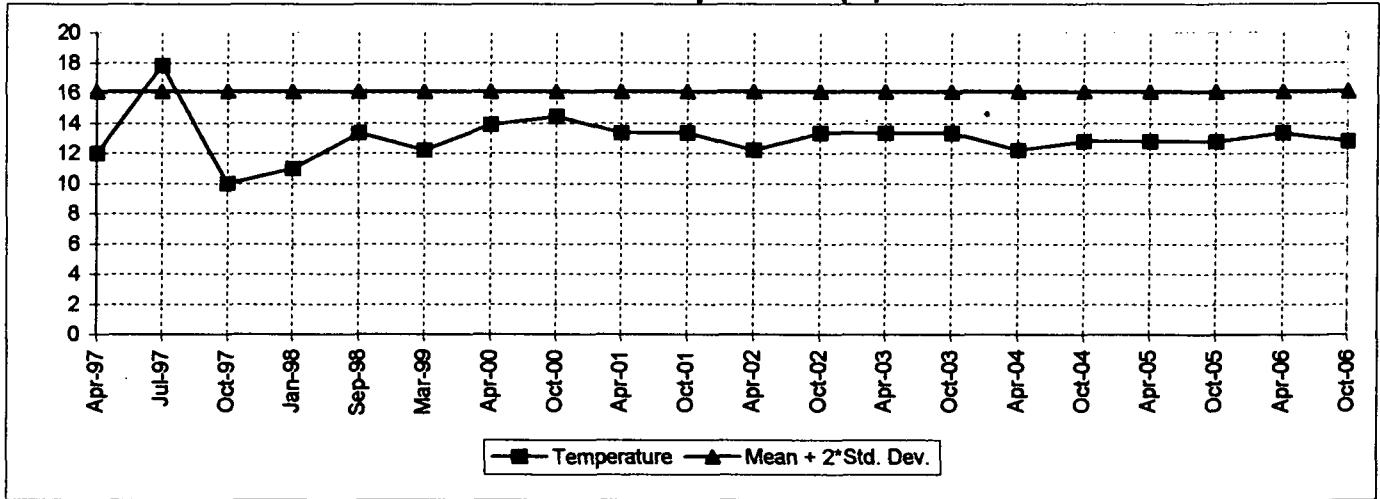
MW-92-5

Temperature (C)



MW-92-7

Temperature (C)



SURFACE WATER SAMPLING RESULTS - 1997 to 2006
Arsenic, Dissolved (mg/L)

Date	SW-1
Apr-97	0.0013
Jul-97	0.002
Oct-97	0.0029
Jan-98	0.003
Mar-99	<0.001

Upgradient Mean + 2(Standard Deviation) = **0.0039** Action Level = **0.001 dNRL**

Barium, Dissolved (mg/l)

Date	SW-1
Apr-97	0.11
Jul-97	0.05
Oct-97	0.099
Jan-98	0.076
Mar-99	0.048

Upgradient Mean + 2(Standard Deviation) = **0.1327** Action Level = **2 fHAL**

Magnesium, Dissolved (mg/l)

Date	SW-1
Apr-97	0.68
Jul-97	4
Oct-97	0.25
Jan-98	0.3
Mar-99	2.06

Upgradient Mean + 2(Standard Deviation) = **4.6564** Action Level = **None**

Zinc, Dissolved (mg/l)

Date	SW-1
Apr-97	<0.03
Jul-97	0.031
Oct-97	0.033
Jan-98	<0.03
Mar-99	<0.03

Upgradient Mean + 2(Standard Deviation) = **0.0334** Action Level = **2 fHAL**

Chloride (mg/l)

Date	SW-1
Apr-97	54
Jul-97	52
Oct-97	51
Jan-98	56
Sep-98	47.5
Mar-99	51
Apr-00	46
Oct-00	41
Apr-01	46
Oct-01	48
Apr-02	44
Oct-02	45
Apr-03	51
Oct-03	47
Apr-04	49
Oct-04	49
Apr-05	61
Oct-05	64
Apr-06	81
Oct-06	68

Upgradient Mean + 2(Standard Deviation) = **71.62** Action Level = **250 fSMCL**

Nitrogen, Ammonia (mg/l)

Date	SW-1
Apr-97	<1
Jul-97	<1
Oct-97	<1
Jan-98	<1
Sep-98	<1
Mar-99	<1
Apr-00	<1
Oct-00	<1
Apr-01	<1
Oct-01	<1
Apr-02	<1
Oct-02	<1
Apr-03	<1
Oct-03	<1
Apr-04	<1
Oct-04	<1
Apr-05	<1
Oct-05	<1
Apr-06	<1
Oct-06	<1

Upgradient Mean + 2(Standard Deviation) = **1.0000** Action Level = **30 f action level**

Iron, Dissolved (mg/l)

Date	SW-1
Apr-97	0.033
Jul-97	0.035
Oct-97	<0.03
Jan-98	<0.035
Sep-98	<0.03
Mar-99	0.052
Apr-00	<0.03
Oct-00	<0.03
Apr-01	0.082
Oct-01	<0.03
Apr-02	<0.03
Oct-02	0.032
Apr-03	<0.030
Oct-03	<0.030
Apr-04	<0.03
Oct-04	<0.03
Apr-05	0.104
Oct-05	0.085
Apr-06	0.083
Oct-06	0.378

Upgradient Mean + 2(Standard Deviation) = **0.218** Action Level = **0.3 f action level**

Chemical Oxygen Demand (mg/l)

Date	SW-1
Apr-97	27
Jul-97	21
Oct-97	11
Jan-98	27
Sep-98	<10
Mar-99	10.5
Apr-00	<10
Oct-00	18
Apr-01	13
Oct-01	<10
Apr-02	11
Oct-02	23
Apr-03	29
Oct-03	15
Apr-04	26
Oct-04	<10
Apr-05	<10
Oct-05	16
Apr-06	10
Oct-06	33

Upgradient Mean + 2(Standard Deviation) = **32.67** Action Level = **None**

Conductance (mS)

Date	SW-1
Apr-97	0.54
Jul-97	0.58
Oct-97	0.63
Jan-98	0.54
Sep-98	0.50
Mar-99	0.54
Apr-00	0.53
Oct-00	0.49
Apr-01	0.51
Oct-01	0.57
Apr-02	0.48
Oct-02	0.81
Apr-03	0.93
Oct-03	0.86
Apr-04	0.88
Oct-04	1.25
Apr-05	1.23
Oct-05	0.64
Apr-06	0.65
Oct-06	0.57

Upgradient Mean + 2(Standard Deviation) = **1.15** Action Level = None

pH

Date	SW-1
Apr-97	11.4
Jul-97	10.1
Oct-97	11.2
Jan-98	11.8
Sep-98	9.5
Mar-99	9.8
Apr-00	9.8
Oct-00	6.2
Apr-01	8.7
Oct-01	8.3
Apr-02	11.3
Oct-02	11.22
Apr-03	11.34
Oct-03	10.65
Apr-04	10.29
Oct-04	9.42
Apr-05	9.16
Oct-05	9.77
Apr-06	10.02
Oct-06	10.43

Upgradient Mean + 2(Standard Deviation) = **12.65** Upper Action Level = 8.5 fSMCL
 Upgradient Mean - 2(Standard Deviation) = **7.38** Lower Action Level = 6.5 fSMCL

Temperature (C)

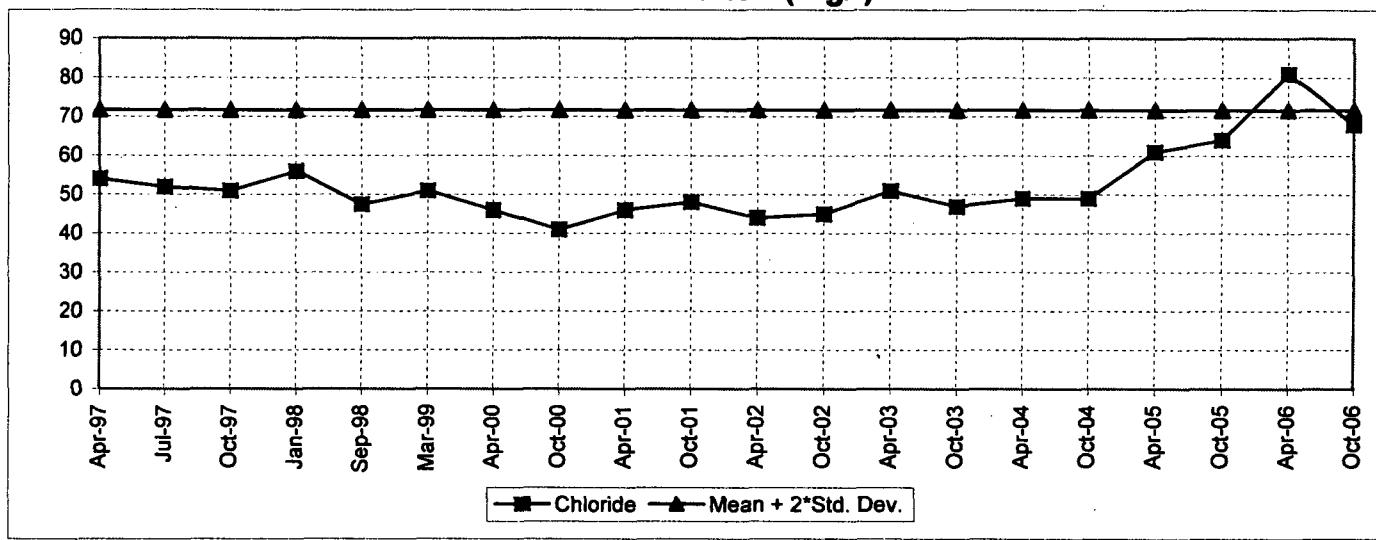
Date	SW-1
Apr-97	12.00
Jul-97	26.70
Oct-97	14.00
Jan-98	0.00
Sep-98	24.40
Mar-99	8.33
Apr-00	18.88
Oct-00	17.77
Apr-01	17.77
Oct-01	12.78
Apr-02	14.44
Oct-02	13.88
Apr-03	14.44
Oct-03	12.77
Apr-04	15.56
Oct-04	16.11
Apr-05	13.88
Oct-05	19.44
Apr-06	18.89
Oct-06	11.11

Upgradient Mean + 2(Standard Deviation) = **26.39**

Action Level = **None**

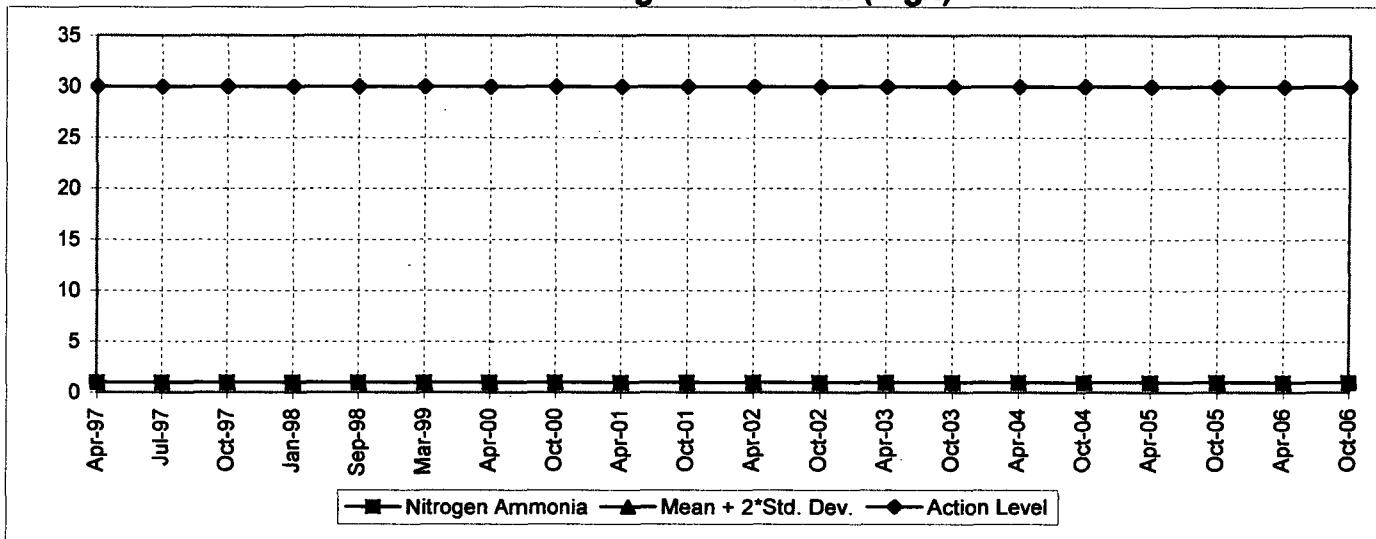
SW-1

Chloride (mg/l)



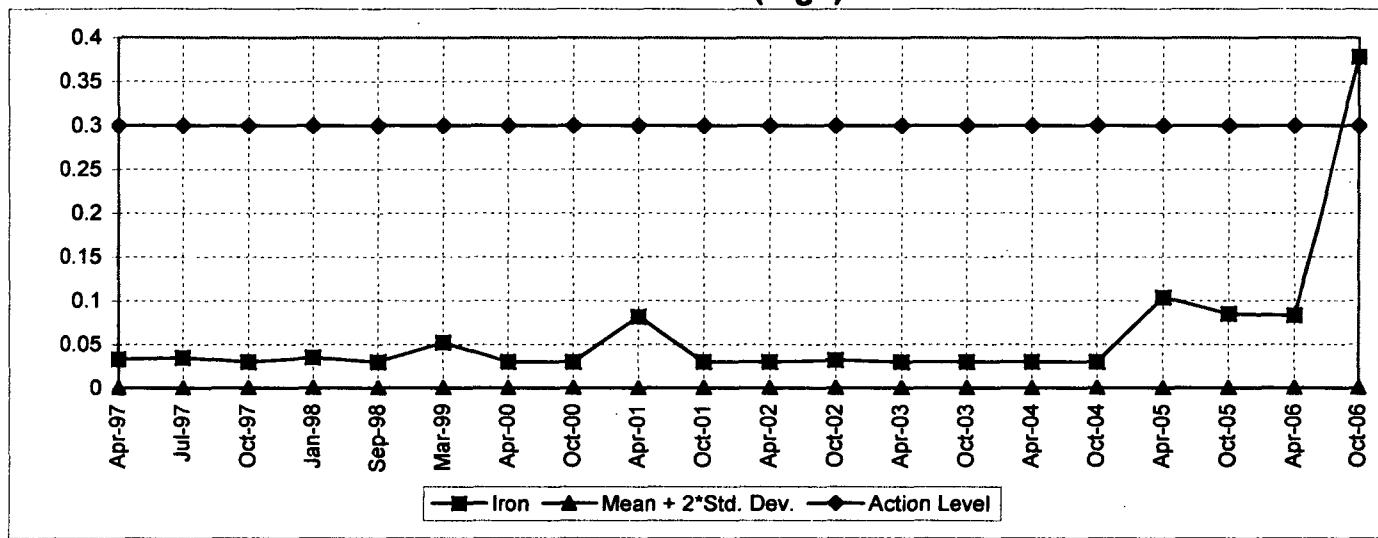
SW-1

Nitrogen Ammonia (mg/l)



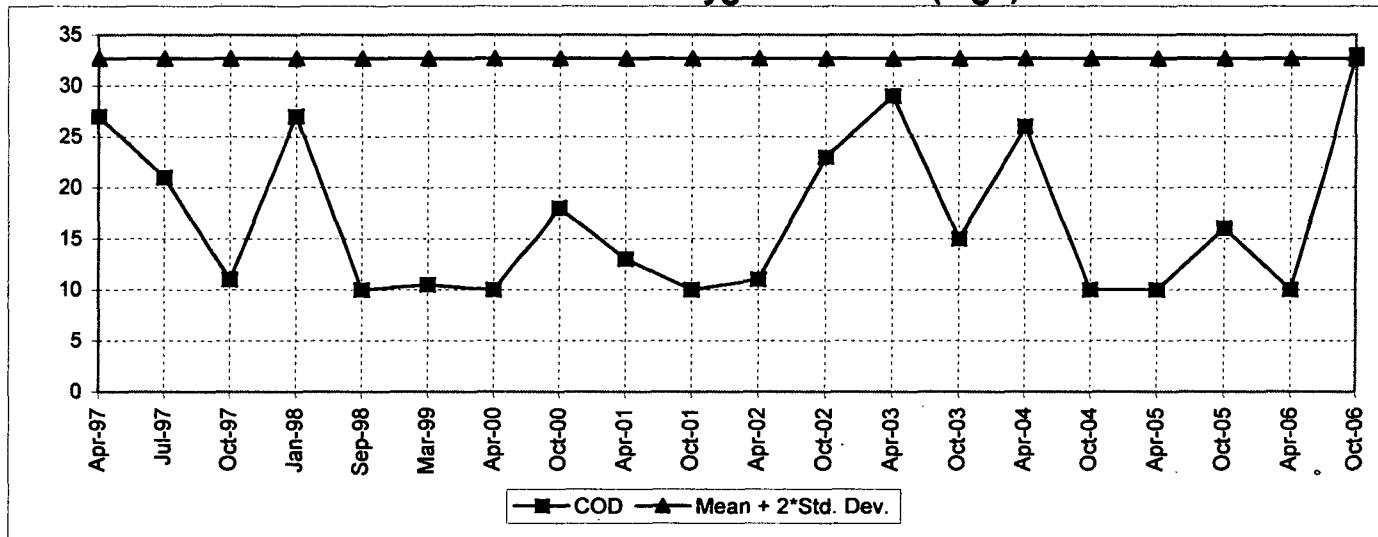
SW-1

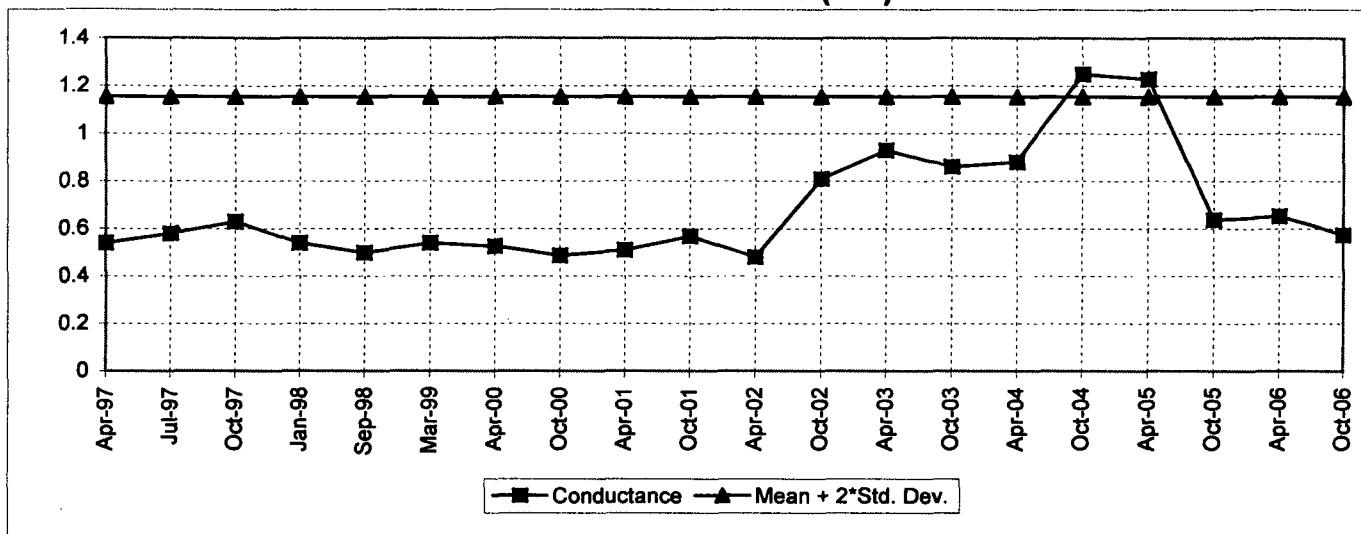
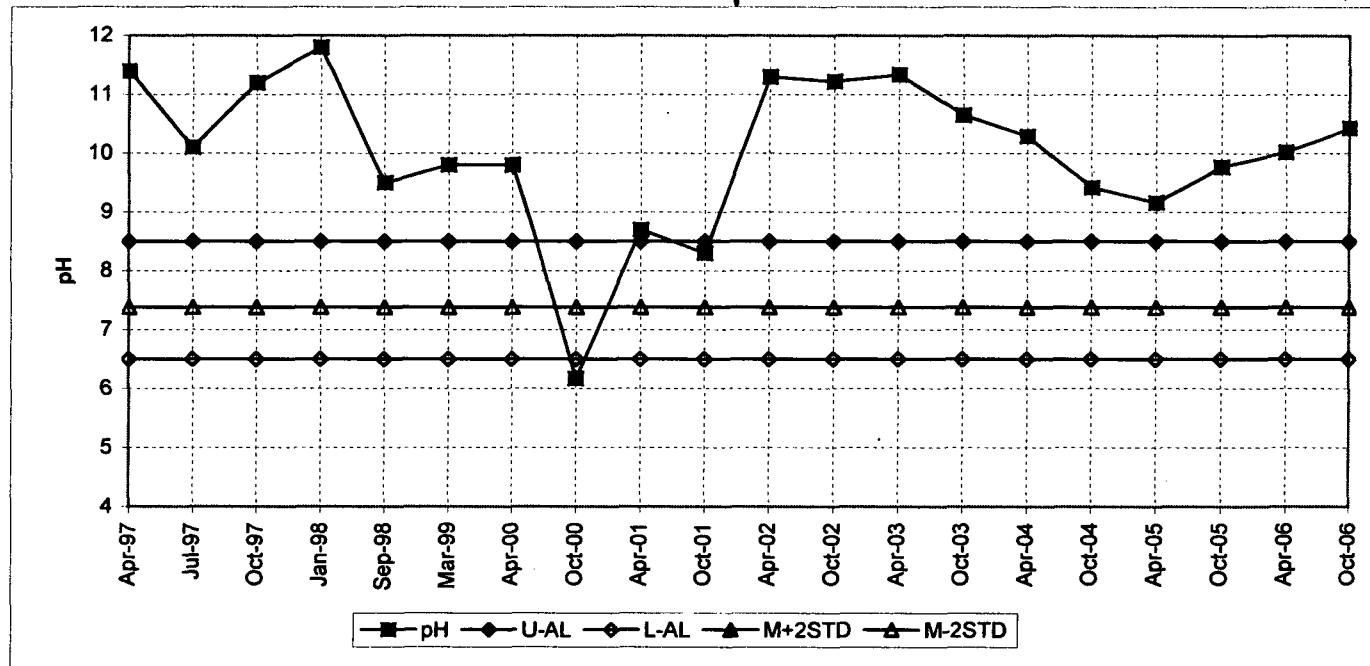
Iron (mg/l)



SW-1

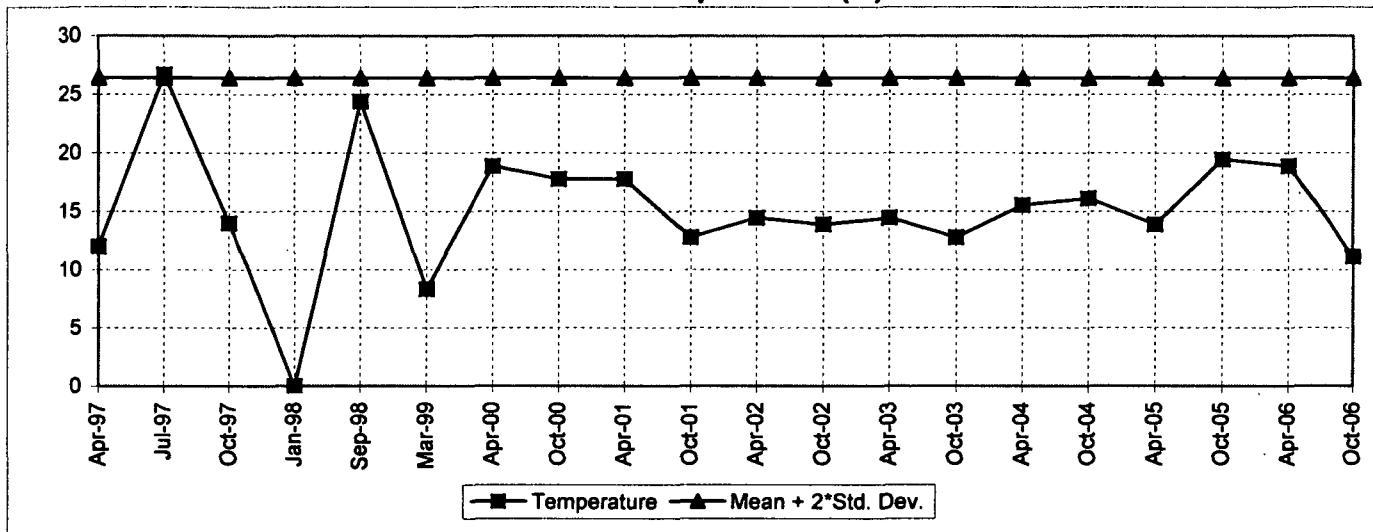
Chemical Oxygen Demand (mg/l)



SW-1**Conductance (mS)****SW-1****pH**

SW-1

Temperature (C)



APPENDIX - 4
IDNR SAMPLING FORMS

**FORM FOR GROUNDWATER SAMPLING AND/OR
GROUNDWATER ELEVATION MEASUREMENT**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P

Monitoring Well/Piezometer No. MW-92-1 Upgradient X
Downgradient _____

Name of person sampling Wayne Shanon

A. MONITORING WELL/PIEZOMETER CONDITIONS

Well/Piezometer Property Capped? Yes Standing Water or Litter No
If no, explain _____ If yes, explain _____

B. GROUNDWATER ELEVATIONN MEASUREMENT (+/- 0.01 FOOT, MSL)

Elevation: Top of inner well casing 796.82 Ground Elevation 794.78
Depth of well 26.6' Inside Casing Diameter (in inches) 2
Equipment Used Slope Water Level Indicator, Model 51453

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>4/27/06 @ 16:05</u>	<u>19.32</u>	<u>777.50</u>
After Purging	<u>4/27/06 @ 17:25</u>	<u>19.32</u>	_____
Before Sampling	<u>4/27/06 @ 17:30</u>	<u>19.32</u>	_____

***C. WELL PURGING**

Quantity of Water Removed from Well (gallons) 3.5
No. of Well Volumes (based on current water level) 3
Was the well pumped/bailed dry? No

Equipment used:

Bailer type <u>Disposable</u>	Dedicated Bailer? <u>Yes</u>
Pump type _____	Dedicated Pump? _____
If not dedicated, method of cleaning _____	

***D. FIELD MEASUREMENT**

Weather Conditions Sunny 70s

Field Measurements (after stabilization):

Temperature <u>55</u>	Units <u>°F</u>
Equipment used <u>Glass Thermometer</u>	
pH <u>6.65</u>	
Equipment used <u>pH Tester II</u>	
Specific Conditions <u>1042</u>	Units <u>µs/cm</u>
Equipment used <u>Orion 124 (make & model)</u>	

Comments _____

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations

**FORM FOR GROUNDWATER SAMPLING AND/OR
GROUNDWATER ELEVATION MEASUREMENT**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P

Monitoring Well/Piezometer No. MW-92-1R Upgradient X
Downgradient _____

Name of person sampling Wayne Shannon

A. MONITORING WELL/PIEZOMETER CONDITIONS

Well/Piezometer Properly Capped? Yes Standing Water or Litter No
If no, explain _____ If yes, explain _____

B. GROUNDWATER ELEVATIONN MEASUREMENT (+/- 0.01 FOOT, MSL)

Elevation : Top of inner well casing 789.92 Ground Elevation 789.64
Depth of well 24.08' Inside Casing Diameter (in inches) 2
Equipment Used Slope Water Level Indicator, Model 51453

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>4/27/06 @ 14:25</u>	<u>12.50</u>	<u>777.42</u>
After Purging	<u>4/27/06 @ 14:30</u>	<u>12.50</u>	
Before Sampling	<u>4/27/06 @ 15:00</u>	<u>12.50</u>	

***C. WELL PURGING**

Quantity of Water Removed from Well (gallons) 5.5
No. of Well Volumes (based on current water level) 3
Was the well pumped/bailed dry? No

Equipment used:

Bailer type Disposable Dedicated Bailer? Yes
Pump type _____ Dedicated Pump? _____
If not dedicated, method of cleaning _____

***D. FIELD MEASUREMENT**

Weather Conditions Sunny 70s

Field Measurements (after stabilization):

Temperature	<u>55</u>	Units <u>°F</u>
Equipment used	<u>Glass Thermometer</u>	
pH	<u>7.18</u>	
Equipment used	<u>pH Tester II</u>	
Specific Conditions	<u>1485</u>	Units <u>µs/cm</u>
Equipment used	<u>Orion 124 (make & model)</u>	

Comments _____

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations

**FORM FOR GROUNDWATER SAMPLING AND/OR
GROUNDWATER ELEVATION MEASUREMENT**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P

Monitoring Well/Piezometer No. MW-92-2 Upgradient _____ X
Downgradient _____

Name of person sampling Wayne Shanon

A. MONITORING WELL/PIEZOMETER CONDITIONS

Well/Piezometer Properly Capped? Yes Standing Water or Litter No
If no, explain _____ If yes, explain _____

B. GROUNDWATER ELEVATIONN MEASUREMENT (+/- 0.01 FOOT, MSL)

Elevation: Top of inner well casing 797.47 Ground Elevation 794.78
Depth of well 62.5' Inside Casing Diameter (in inches) 2
Equipment Used Slope Water Level Indicator, Model 51453

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>4/27/06 @ 16:00</u>	<u>20.00</u>	<u>777.47</u>
After Purging	<u>4/27/06 @ 16:45</u>	<u>20.00</u>	
Before Sampling	<u>4/27/06 @ 16:50</u>	<u>20.00</u>	

***C. WELL PURGING**

Quantity of Water Removed from Well (gallons) 20.5
No. of Well Volumes (based on current water level) 3
Was the well pumped/bailed dry? No

Equipment used:

Bailer type <u>Disposable</u>	Dedicated Bailer? <u>Yes</u>
Pump type _____	Dedicated Pump? _____
If not dedicated, method of cleaning _____	

***D. FIELD MEASUREMENT**

Weather Conditions Sunny 70s

Field Measurements (after stabilization):

Temperature <u>55</u>	Units <u>°F</u>
Equipment used <u>Glass Thermometer</u>	
pH <u>6.61</u>	
Equipment used <u>pH Tester II</u>	
Specific Conditions <u>1062</u>	Units <u>µs/cm</u>
Equipment used <u>Orion 124 (make & model)</u>	

Comments _____

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations

**FORM FOR GROUNDWATER SAMPLING AND/OR
GROUNDWATER ELEVATION MEASUREMENT**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P

Monitoring Well/Piezometer No. MW-92-3 Upgradient _____
Downgradient _____

Name of person sampling Wayne Shanon

A. MONITORING WELL/PIEZOMETER CONDITIONS

Well/Piezometer Properly Capped? Yes Standing Water or Litter No
If no, explain _____ If yes, explain _____

B. GROUNDWATER ELEVATIONN MEASUREMENT (+/- 0.01 FOOT, MSL)

Elevation : Top of inner well casing 797.70 Ground Elevation 797.12
Depth of well 25.6' Inside Casing Diameter (in inches) 2
Equipment Used Slope Water Level Indicator, Model 51453

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>4/27/06 @ 13:45</u>	<u>20.66</u>	<u>777.04</u>
After Purging	<u>4/27/06 @ 14:05</u>	<u>20.66</u>	
Before Sampling	<u>4/27/06 @ 14:10</u>	<u>20.66</u>	

***C. WELL PURGING**

Quantity of Water Removed from Well (gallons) 2.5
No. of Well Volumes (based on current water level) 3
Was the well pumped/bailed dry? No

Equipment used:

Bailer type	<u>Disposable</u>	Dedicated Bailer?	<u>Yes</u>
Pump type		Dedicated Pump?	
If not dedicated, method of cleaning _____			

***D. FIELD MEASUREMENT**

Weather Conditions Sunny 70s

Field Measurements (after stabilization):

Temperature	<u>55</u>	Units	<u>°F</u>
Equipment used	<u>Glass Thermometer</u>		
pH	<u>6.60</u>		
Equipment used	<u>pH Tester II</u>		
Specific Conditions	<u>1505</u>	Units	<u>µs/cm</u>
Equipment used	<u>Orion 124 (make & model)</u>		

Comments Not enough water, not sampled.

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations

**FORM FOR GROUNDWATER SAMPLING AND/OR
GROUNDWATER ELEVATION MEASUREMENT**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P

Monitoring Well/Piezometer No. MW-92-4 Upgradient _____
Downgradient X

Name of person sampling Wayne Shanon

A. MONITORING WELL/PIEZOMETER CONDITIONS

Well/Piezometer Properly Capped? Yes Standing Water or Litter No
If no, explain _____ If yes, explain _____

B. GROUNDWATER ELEVATIONN MEASUREMENT (+/- 0.01 FOOT, MSL)

Elevation : Top of inner well casing 799.27 Ground Elevation 798.69
Depth of well 29.9' Inside Casing Diameter (in inches) 2
Equipment Used Slope Water Level Indicator, Model 51453

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>4/27/06 @ 10:20</u>	<u>22.21</u>	<u>771.96</u>
After Purging	<u>4/27/06 @ 11:10</u>	<u>22.21</u>	
Before Sampling	<u>4/27/06 @ 11:15</u>	<u>22.21</u>	

***C. WELL PURGING**

Quantity of Water Removed from Well (gallons) 2
No. of Well Volumes (based on current water level) 3
Was the well pumped/bailed dry? No

Equipment used:

Bailer type <u>Disposable</u>	Dedicated Bailer? <u>Yes</u>
Pump type _____	Dedicated Pump? _____
If not dedicated, method of cleaning _____	

***D. FIELD MEASUREMENT**

Weather Conditions Sunny 60s

Field Measurements (after stabilization):

Temperature <u>55</u>	Units <u>°F</u>
Equipment used <u>Glass Thermometer</u>	
pH <u>6.64</u>	
Equipment used <u>pH Tester II</u>	
Specific Conditions <u>1085</u>	Units <u>µs/cm</u>
Equipment used <u>Orion 124 (make & model)</u>	

Comments _____

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations

**FORM FOR GROUNDWATER SAMPLING AND/OR
GROUNDWATER ELEVATION MEASUREMENT**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P

Monitoring Well/Piezometer No. MW-92-5 Upgradient _____
Downgradient X

Name of person sampling Wayne Shanon

A. MONITORING WELL/PIEZOMETER CONDITIONS

Well/Piezometer Properly Capped? Yes Standing Water or Litter No
If no, explain _____ If yes, explain _____

B. GROUNDWATER ELEVATIONN MEASUREMENT (+/- 0.01 FOOT, MSL)

Elevation : Top of inner well casing 799.52 Ground Elevation 798.69
Depth of well 68.1' Inside Casing Diameter (in inches) 2
Equipment Used Slope Water Level Indicator, Model 51453

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>4/27/06 @ 10:15</u>	<u>22.70</u>	<u>772.16</u>
After Purging	<u>4/27/06 @ 11:50</u>	<u>22.70</u>	
Before Sampling	<u>4/27/06 @ 11:55</u>	<u>22.70</u>	

***C. WELL PURGING**

Quantity of Water Removed from Well (gallons) 22
No. of Well Volumes (based on current water level) 3
Was the well pumped/bailed dry? No

Equipment used:

Bailer type Disposable Dedicated Bailer? Yes
Pump type _____ Dedicated Pump? _____
If not dedicated, method of cleaning _____

***D. FIELD MEASUREMENT**

Weather Conditions Sunny 60s

Field Measurements (after stabilization):

Temperature	<u>55</u>	Units <u>°F</u>
Equipment used	<u>Glass Thermometer</u>	
pH	<u>6.30</u>	
Equipment used	<u>pH Tester II</u>	
Specific Conditions	<u>1158</u>	Units <u>µs/cm</u>
Equipment used	<u>Orion 124 (make & model)</u>	

Comments _____

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations

**FORM FOR GROUNDWATER SAMPLING AND/OR
GROUNDWATER ELEVATION MEASUREMENT**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P

Monitoring Well/Piezometer No. MW-92-6 Upgradient _____
Downgradient X

Name of person sampling Wayne Shanon

A. MONITORING WELL/PIEZOMETER CONDITIONS

Well/Piezometer Properly Capped? Yes Standing Water or Litter No
If no, explain _____ If yes, explain _____

B. GROUNDWATER ELEVATIONN MEASUREMENT (+/- 0.01 FOOT, MSL)

Elevation : Top of inner well casing 801.38 Ground Elevation 799.01
Depth of well 33.4' Inside Casing Diameter (in inches) 2
Equipment Used Slope Water Level Indicator, Model 51453

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>4/27/06 @ 8:30</u>	<u>24.62</u>	<u>776.76</u>
After Purging	<u>4/27/06 @ 9:15</u>	<u>24.62</u>	
Before Sampling	<u>4/27/06 @ 9:20</u>	<u>24.62</u>	

***C. WELL PURGING**

Quantity of Water Removed from Well (gallons) 3.5
No. of Well Volumes (based on current water level) 3
Was the well pumped/bailed dry? No

Equipment used:

Bailer type <u>Disposable</u>	Dedicated Bailer? <u>Yes</u>
Pump type _____	Dedicated Pump? _____
If not dedicated, method of cleaning _____	

***D. FIELD MEASUREMENT**

Weather Conditions Sunny 50s

Field Measurements (after stabilization):

Temperature <u>56</u>	Units <u>°F</u>
Equipment used <u>Glass Thermometer</u>	
pH <u>6.42</u>	
Equipment used <u>pH Tester II</u>	
Specific Conditions <u>1528</u>	Units <u>µs/cm</u>
Equipment used <u>Orion 124 (make & model)</u>	

Comments _____

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations

**FORM FOR GROUNDWATER SAMPLING AND/OR
GROUNDWATER ELEVATION MEASUREMENT**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P

Monitoring Well/Piezometer No. MW-92-7 Upgradient _____
Downgradient X

Name of person sampling Wayne Shanon

A. MONITORING WELL/PIEZOMETER CONDITIONS

Well/Piezometer Property Capped? Yes Standing Water or Litter No
If no, explain _____ If yes, explain _____

B. GROUNDWATER ELEVATIONN MEASUREMENT (+/- 0.01 FOOT, MSL)

Elevation : Top of inner well casing 801.50 Ground Elevation 799.01
Depth of well 69.4' Inside Casing Diameter (in inches) 2
Equipment Used Slope Water Level Indicator, Model 51453

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>4/27/06 @ 8:35</u>	<u>24.75</u>	<u>722.22</u>
After Purging	<u>4/27/06 @ 10:00</u>	<u>24.75</u>	
Before Sampling	<u>4/27/06 @ 10:00</u>	<u>24.75</u>	

***C. WELL PURGING**

Quantity of Water Removed from Well (gallons) 21.5
No. of Well Volumes (based on current water level) 3
Was the well pumped/bailed dry? No

Equipment used:

Bailer type <u>Disposable</u>	Dedicated Bailer? <u>Yes</u>
Pump type _____	Dedicated Pump? _____
If not dedicated, method of cleaning _____	

***D. FIELD MEASUREMENT**

Weather Conditions Sunny 50s

Field Measurements (after stabilization):

Temperature <u>56</u>	Units <u>°F</u>
Equipment used <u>Glass Thermometer</u>	
pH <u>6.58</u>	
Equipment used <u>pH Tester II</u>	
Specific Conditions <u>1146</u>	Units <u>µs/cm</u>
Equipment used <u>Orion 124 (make & model)</u>	

Comments _____

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations

**FORM FOR
SURFACE WATER SAMPLING**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P
 Surface Monitoring point No. SW-1 Date/Time 4/27/06 @ 15:40
 Name of Person Sampling Wayne Shannon

A. TYPE OF MONITORING POINT

Stream	<u> </u>	Open Tile	<u> </u>
Road Ditch	<u> </u>	Tile with Riser	<u> </u>
Drainage Ditch	<u> </u>	Other	<u>Pond</u>

B. PURPOSE OF MONITORING POINT

Upstream	<u> </u>	Downstream	<u> </u>
Within Landfill	<u>X</u>	Other	<u> </u>

C. MOINITORING POINT CONDITIONS

General description/condition of monitoring point Dirt & concrete fill

Was monitoring point dry? No Too little water to sample? No
 Was water flowing? No If yes, estimate quantity _____
 If yes, estimate depth _____

Was water discolored? No If yes, describe below.
 Does water have odor? No If yes, describe below.
 Was ground discolored? No If yes, describe below.
 Litter present? No If yes, describe below.

Comments _____

D. FIELD MEASUREMENTS

Weather Conditions Sunny 70's

Field Measurements (after stabilization):

Temperature	<u>66</u>	Units	<u>°F</u>
Equipment used	<u>Glass Thermometer</u>		
pH	<u>10.02</u>		
Equipment used	<u>pH Tester II</u>		
Specific Conditions	<u>654</u>	Units	<u>µs/cm</u>
Equipment used	<u>Orion (make) 124 (model)</u>		

Comments _____

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations

**FORM FOR GROUNDWATER SAMPLING AND/OR
GROUNDWATER ELEVATION MEASUREMENT**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P

Monitoring Well/Piezometer No. MW-92-1 Upgradient X
Downgradient _____

Name of person sampling Wayne Shanon

A. MONITORING WELL/PIEZOMETER CONDITIONS

Well/Piezometer Properly Capped? Yes Standing Water or Litter No
If no, explain _____ If yes, explain _____

B. GROUNDWATER ELEVATIONN MEASUREMENT (+/- 0.01 FOOT, MSL)

Elevation: Top of inner well casing 796.82 Ground Elevation 794.78
Depth of well 26.6' Inside Casing Diameter (in inches) 2
Equipment Used Slope Water Level Indicator, Model 51453

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>10/19/06 @ 15:55</u>	<u>19.95</u>	<u>776.87</u>
After Purging	<u>10/19/06 @ 16:10</u>	<u>19.95</u>	_____
Before Sampling	<u>10/19/06 @ 16:20</u>	<u>19.95</u>	_____

***C. WELL PURGING**

Quantity of Water Removed from Well (gallons) 3.5
No. of Well Volumes (based on current water level) 3
Was the well pumped/bailed dry? No

Equipment used:

Bailer type <u>Disposable</u>	Dedicated Bailer? <u>Yes</u>
Pump type _____	Dedicated Pump? _____
If not dedicated, method of cleaning _____	

***D. FIELD MEASUREMENT**

Weather Conditions Sunny 50s

Field Measurements (after stabilization):

Temperature <u>56</u>	Units <u>°F</u>
Equipment used <u>Glass Thermometer</u>	
pH <u>6.44</u>	
Equipment used <u>pH Tester II</u>	
Specific Conditions <u>1080</u>	Units <u>µs/cm</u>
Equipment used <u>Orion 124 (make & model)</u>	

Comments _____

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations

**FORM FOR GROUNDWATER SAMPLING AND/OR
GROUNDWATER ELEVATION MEASUREMENT**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P

Monitoring Well/Piezometer No. MW-92-1R Upgradient X
Downgradient _____

Name of person sampling Wayne Shanon

A. MONITORING WELL/PIEZOMETER CONDITIONS

Well/Piezometer Properly Capped? Yes Standing Water or Litter No
If no, explain _____ If yes, explain _____

B. GROUNDWATER ELEVATIONN MEASUREMENT (+/- 0.01 FOOT, MSL)

Elevation : Top of inner well casing 789.92 Ground Elevation 789.64
Depth of well 24.08' Inside Casing Diameter (in inches) 2
Equipment Used Slope Water Level Indicator, Model 51453

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>10/19/06 @ 12:50</u>	<u>13.41</u>	<u>776.51</u>
After Purging	<u>10/19/06 @ 13:05</u>	<u>13.41</u>	_____
Before Sampling	<u>10/19/06 @ 13:15</u>	<u>13.41</u>	_____

***C. WELL PURGING**

Quantity of Water Removed from Well (gallons) 5.5
No. of Well Volumes (based on current water level) 3
Was the well pumped/bailed dry? No

Equipment used:

Bailer type <u>Disposable</u>	Dedicated Bailer? <u>Yes</u>
Pump type _____	Dedicated Pump? _____
If not dedicated, method of cleaning _____	

***D. FIELD MEASUREMENT**

Weather Conditions Sunny 48

Field Measurements (after stabilization):

Temperature <u>55</u>	Units <u>°F</u>
Equipment used <u>Glass Thermometer</u>	
pH <u>7.42</u>	
Equipment used <u>pH Tester II</u>	
Specific Conditions <u>1613</u>	Units <u>µs/cm</u>
Equipment used <u>Orion 124 (make & model)</u>	

Comments _____

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations

**FORM FOR GROUNDWATER SAMPLING AND/OR
GROUNDWATER ELEVATION MEASUREMENT**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P

Monitoring Well/Piezometer No. MW-92-2 Upgradient X
Downgradient _____

Name of person sampling Wayne Shanon

A. MONITORING WELL/PIEZOMETER CONDITIONS

Well/Piezometer Properly Capped? Yes Standing Water or Litter No
If no, explain _____ If yes, explain _____

B. GROUNDWATER ELEVATIONN MEASUREMENT (+/- 0.01 FOOT, MSL)

Elevation : Top of inner well casing 797.47 Ground Elevation 794.78
Depth of well 62.5' Inside Casing Diameter (in inches) 2
Equipment Used Slope Water Level Indicator, Model 51453

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>10/19/06 @ 14:40</u>	<u>20.65</u>	<u>776.82</u>
After Purging	<u>10/19/06 @ 15:20</u>	<u>20.65</u>	
Before Sampling	<u>10/19/06 @ 15:30</u>	<u>20.65</u>	

***C. WELL PURGING**

Quantity of Water Removed from Well (gallons) 20.5
No. of Well Volumes (based on current water level) 3
Was the well pumped/bailed dry? No

Equipment used:

Bailer type <u>Disposable</u>	Dedicated Bailer? <u>Yes</u>
Pump type _____	Dedicated Pump? _____
If not dedicated, method of cleaning _____	

***D. FIELD MEASUREMENT**

Weather Conditions Sunny 50s

Field Measurements (after stabilization):

Temperature <u>55</u>	Units <u>°F</u>
Equipment used <u>Glass Thermometer</u>	
pH <u>6.88</u>	
Equipment used <u>pH Tester II</u>	
Specific Conductivity <u>1046</u>	Units <u>µs/cm</u>
Equipment used <u>Orion 124 (make & model)</u>	

Comments _____

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations

**FORM FOR GROUNDWATER SAMPLING AND/OR
GROUNDWATER ELEVATION MEASUREMENT**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P

Monitoring Well/Piezometer No. MW-92-3 Upgradient _____
Downgradient _____

Name of person sampling Wayne Shanon

A. MONITORING WELL/PIEZOMETER CONDITIONS

Well/Piezometer Properly Capped? Yes Standing Water or Litter No
If no, explain _____ If yes, explain _____

B. GROUNDWATER ELEVATIONN MEASUREMENT (+/- 0.01 FOOT, MSL)

Elevation : Top of inner well casing 797.70 Ground Elevation 797.12
Depth of well 25.6' Inside Casing Diameter (in inches) 2
Equipment Used Slope Water Level Indicator, Model 51453

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>10/19/06 @ 11:55</u>	<u>22.08</u>	<u>775.62</u>
After Purging	<u>10/19/06 @ 12:15</u>	<u>22.08</u>	<u></u>
Before Sampling	<u>10/19/06 @ 12:25</u>	<u>22.08</u>	<u></u>

***C. WELL PURGING**

Quantity of Water Removed from Well (gallons) 2
No. of Well Volumes (based on current water level) 3
Was the well pumped/bailed dry? No

Equipment used:

Bailer type <u>Disposable</u>	Dedicated Bailer? <u>Yes</u>
Pump type _____	Dedicated Pump? _____
If not dedicated, method of cleaning _____	

***D. FIELD MEASUREMENT**

Weather Conditions Partly cloudy 42°

Field Measurements (after stabilization):

Temperature <u>55</u>	Units <u>°F</u>
Equipment used <u>Glass Thermometer</u>	
pH <u>7.24</u>	
Equipment used <u>pH Tester II</u>	
Specific Conditions <u>1162</u>	Units <u>µs/cm</u>
Equipment used <u>Orion 124 (make & model)</u>	

Comments Not enough water, not sampled.

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations

**FORM FOR GROUNDWATER SAMPLING AND/OR
GROUNDWATER ELEVATION MEASUREMENT**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P

Monitoring Well/Piezometer No. MW-92-4 Upgradient _____
Downgradient X

Name of person sampling Wayne Shanon

A. MONITORING WELL/PIEZOMETER CONDITIONS

Well/Piezometer Properly Capped? Yes Standing Water or Litter No
If no, explain _____ If yes, explain _____

B. GROUNDWATER ELEVATIONN MEASUREMENT (+/- 0.01 FOOT, MSL)

Elevation : Top of inner well casing 799.09 Ground Elevation 798.69
Depth of well 29.9' Inside Casing Diameter (in inches) 2
Equipment Used Slope Water Level Indicator, Model 51453

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>10/19/06 @ 11:15</u>	<u>23.58</u>	<u>775.51</u>
After Purging	<u>10/19/06 @ 11:30</u>	<u>23.58</u>	_____
Before Sampling	<u>10/19/06 @ 11:40</u>	<u>23.58</u>	_____

***C. WELL PURGING**

Quantity of Water Removed from Well (gallons) 3
No. of Well Volumes (based on current water level) 3
Was the well pumped/bailed dry? No

Equipment used:

Bailer type <u>Disposable</u>	Dedicated Bailer? <u>Yes</u>
Pump type _____	Dedicated Pump? _____
If not dedicated, method of cleaning _____	

***D. FIELD MEASUREMENT**

Weather Conditions Partly cloudy 40s

Field Measurements (after stabilization):

Temperature <u>55</u>	Units <u>°F</u>
Equipment used <u>Glass Thermometer</u>	
pH <u>6.89</u>	
Equipment used <u>pH Tester II</u>	
Specific Conditions <u>1301</u>	Units <u>µs/cm</u>
Equipment used <u>Orion 124 (make & model)</u>	

Comments _____

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations

**FORM FOR GROUNDWATER SAMPLING AND/OR
GROUNDWATER ELEVATION MEASUREMENT**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P

Monitoring Well/Piezometer No. MW-92-5 Upgradient _____
Downgradient X

Name of person sampling Wayne Shanon

A. MONITORING WELL/PIEZOMETER CONDITIONS

Well/Piezometer Properly Capped? Yes Standing Water or Litter No
If no, explain _____ If yes, explain _____

B. GROUNDWATER ELEVATIONN MEASUREMENT (+/- 0.01 FOOT, MSL)

Elevation : Top of inner well casing 799.52 Ground Elevation 798.69
Depth of well 68.1' Inside Casing Diameter (in inches) 2
Equipment Used Slope Water Level Indicator, Model 51453

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>10/19/06 @ 10:00</u>	<u>24.24</u>	<u>775.28</u>
After Purging	<u>10/19/06 @ 10:40</u>	<u>24.24</u>	_____
Before Sampling	<u>10/19/06 @ 10:50</u>	<u>24.24</u>	_____

***C. WELL PURGING**

Quantity of Water Removed from Well (gallons) 21
No. of Well Volumes (based on current water level) 3
Was the well pumped/bailed dry? No

Equipment used:

Bailer type <u>Disposable</u>	Dedicated Bailer? <u>Yes</u>
Pump type _____	Dedicated Pump? _____
If not dedicated, method of cleaning _____	

***D. FIELD MEASUREMENT**

Weather Conditions Partly cloudy 30s

Field Measurements (after stabilization):

Temperature <u>55</u>	Units <u>°F</u>
Equipment used <u>Glass Thermometer</u>	
pH <u>6.83</u>	
Equipment used <u>pH Tester II</u>	
Specific Conditions <u>1141</u>	Units <u>µs/cm</u>
Equipment used <u>Orion 124 (make & model)</u>	

Comments _____

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations

**FORM FOR GROUNDWATER SAMPLING AND/OR
GROUNDWATER ELEVATION MEASUREMENT**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P

Monitoring Well/Piezometer No. MW-92-6 Upgradient _____
Downgradient X

Name of person sampling Wayne Shanon

A. MONITORING WELL/PIEZOMETER CONDITIONS

Well/Piezometer Properly Capped? Yes Standing Water or Litter No
If no, explain _____ If yes, explain _____

B. GROUNDWATER ELEVATIONN MEASUREMENT (+/- 0.01 FOOT, MSL)

Elevation : Top of inner well casing 801.38 Ground Elevation 799.01
Depth of well 33.4' Inside Casing Diameter (in inches) 2
Equipment Used Slope Water Level Indicator, Model 51453

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>10/19/06 @ 9:20</u>	<u>26.13</u>	<u>775.25</u>
After Purging	<u>10/19/06 @ 9:30</u>	<u>26.13</u>	_____
Before Sampling	<u>10/19/06 @ 9:25</u>	<u>26.13</u>	_____

***C. WELL PURGING**

Quantity of Water Removed from Well (gallons) 3.5
No. of Well Volumes (based on current water level) 3
Was the well pumped/bailed dry? No

Equipment used:

Bailer type <u>Disposable</u>	Dedicated Bailer? <u>Yes</u>
Pump type _____	Dedicated Pump? _____
If not dedicated, method of cleaning _____	

***D. FIELD MEASUREMENT**

Weather Conditions Partly cloudy 30s

Field Measurements (after stabilization):

Temperature <u>55</u>	Units <u>°F</u>
Equipment used <u>Glass Thermometer</u>	
pH <u>6.90</u>	
Equipment used <u>pH Tester II</u>	
Specific Conductivity <u>1372</u>	Units <u>µs/cm</u>
Equipment used <u>Orion 124 (make & model)</u>	

Comments _____

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations

**FORM FOR GROUNDWATER SAMPLING AND/OR
GROUNDWATER ELEVATION MEASUREMENT**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P

Monitoring Well/Piezometer No. MW-92-7 Upgradient _____
Downgradient X

Name of person sampling Wayne Shanon

A. MONITORING WELL/PIEZOMETER CONDITIONS

Well/Piezometer Properly Capped? Yes Standing Water or Litter No
If no, explain _____ If yes, explain _____

B. GROUNDWATER ELEVATIONN MEASUREMENT (+/- 0.01 FOOT, MSL)

Elevation : Top of inner well casing 801.50 Ground Elevation 799.01
Depth of well 69.4' Inside Casing Diameter (in inches) 2
Equipment Used Slope Water Level Indicator, Model 51453

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>10/19/06 @ 8:00</u>	<u>26.30</u>	<u>775.20</u>
After Purging	<u>10/19/06 @ 8:40</u>	<u>26.30</u>	
Before Sampling	<u>10/19/06 @ 8:45</u>	<u>26.30</u>	

***C. WELL PURGING**

Quantity of Water Removed from Well (gallons) 21.5
No. of Well Volumes (based on current water level) 3
Was the well pumped/bailed dry? No

Equipment used:

Bailer type <u>Disposable</u>	Dedicated Bailer? <u>Yes</u>
Pump type _____	Dedicated Pump? _____
If not dedicated, method of cleaning _____	

***D. FIELD MEASUREMENT**

Weather Conditions Partly cloudy 30s

Field Measurements (after stabilization):

Temperature <u>55</u>	Units <u>°F</u>
Equipment used <u>Glass Thermometer</u>	
pH <u>7.08</u>	
Equipment used <u>pH Tester II</u>	
Specific Conductivity <u>1160</u>	Units <u>µs/cm</u>
Equipment used <u>Orion 124 (make & model)</u>	

Comments _____

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations

**FORM FOR
SURFACE WATER SAMPLING**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P
 Surface Monitoring point No. SW-1 Date/Time 10/19/06 @ 14:10
 Name of Person Sampling Wayne Shannon

A. TYPE OF MONITORING POINT

Stream	<u> </u>	Open Tile	<u> </u>
Road Ditch	<u> </u>	Tile with Riser	<u> </u>
Drainage Ditch	<u> </u>	Other	<u>Pond</u>

B. PURPOSE OF MONITORING POINT

Upstream	<u> </u>	Downstream	<u> </u>
Within Landfill	<u>X</u>	Other	<u> </u>

C. MOINITORING POINT CONDITIONS

General description/condition of monitoring point Dirt & concrete fill

Was monitoring point dry?	<u>No</u>	Too little water to sample?	<u>No</u>
Was water flowing?	<u>No</u>	If yes, estimate quantity	<u> </u>
		If yes, estimate depth	<u> </u>

Was water discolored?	<u>No</u>	If yes, describe below.
Does water have odor?	<u>No</u>	If yes, describe below.
Was ground discolored?	<u>No</u>	If yes, describe below.
Litter present?	<u>No</u>	If yes, describe below.

Comments _____

D. FIELD MEASUREMENTS

Weather Conditions Sunny 50's

Field Measurements (after stabilization):

Temperature	<u>52</u>	Units	<u>°F</u>
Equipment used	<u>Glass Thermometer</u>		
pH	<u>10.43</u>		
Equipment used	<u>pH Tester II</u>		
Specific Conditions	<u>574</u>	Units	<u>µs/cm</u>
Equipment used	<u>Orion (make) 124 (model)</u>		

Comments _____

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations

APPENDIX - 5
LABORATORY REPORTS

Accreditations:
Iowa DNR: 095
New Jersey DEP: IA001
Kansas DHE: E-10287

ANALYTICAL REPORT

May 05, 2006

Work Order: 16D1245

Page 1 of 5

Report To
Chandra Shekar Shekar Engineering 8938 Highland Oaks Drive Johnston, IA 50131

Work Order Information
Date Received: 04/28/2006 11:15AM
Collector: Wayne Shannon
Phone: 515-334-5062
PO Number:

Project: Concrete Supply Landfill
Project Number: [none]

Analyte	Result	MRL	Method	Analyst	Analyzed	Qualifier
16D1245-01 MW-92-1			Matrix: Water		Collected: 04/27/06 17:30	
<i>Determination of Volatile Organic Compounds</i>						
Trichloroethylene	8.0 ug/l	0.3	EPA 8260B	TVK	05/02/06 22:40	
Surrogate: Dibromofluoromethane	102 %	67-135		TVK	05/02/06 22:40	
Surrogate: 1,2-Dichloroethane-d4	105 %	73-126		TVK	05/02/06 22:40	
Surrogate: Toluene-d8	101 %	80-117		TVK	05/02/06 22:40	
Surrogate: 4-Bromofluorobenzene	90.3 %	74-125		TVK	05/02/06 22:40	
<i>Determination of Conventional Chemistry Parameters</i>						
Chemical Oxygen Demand	<10 mg/l	10	EPA 410.4	SAA	05/01/06 14:25	
Chloride	52 mg/l	10	EPA 9252	RVV	05/01/06 16:56	
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	05/01/06 14:51	
<i>Determination of Dissolved Metals</i>						
Iron, dissolved	<0.030 mg/l	0.030	EPA 6010B	LAR	05/03/06 8:33	
16D1245-02 MW-92-1R			Matrix: Water		Collected: 04/27/06 15:00	
<i>Determination of Volatile Organic Compounds</i>						
Trichloroethylene	<0.3 ug/l	0.3	EPA 8260B	TVK	05/02/06 23:24	
Surrogate: Dibromofluoromethane	106 %	67-135		TVK	05/02/06 23:24	
Surrogate: 1,2-Dichloroethane-d4	110 %	73-126		TVK	05/02/06 23:24	
Surrogate: Toluene-d8	99.1 %	80-117		TVK	05/02/06 23:24	
Surrogate: 4-Bromofluorobenzene	89.2 %	74-125		TVK	05/02/06 23:24	
<i>Determination of Conventional Chemistry Parameters</i>						
Chemical Oxygen Demand	<10 mg/l	10	EPA 410.4	SAA	05/01/06 14:25	
Chloride	61 mg/l	10	EPA 9252	RVV	05/01/06 16:56	
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	05/01/06 14:51	
<i>Determination of Dissolved Metals</i>						
Iron, dissolved	<0.030 mg/l	0.030	EPA 6010B	LAR	05/03/06 8:46	
16D1245-03 MW-92-2			Matrix: Water		Collected: 04/27/06 16:50	
<i>Determination of Volatile Organic Compounds</i>						
Trichloroethylene	7.6 ug/l	0.3	EPA 8260B	TVK	05/03/06 0:08	

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Johnston, IA 50131

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Work Order: 16D1245

Analyte	Result	MRL	Method	Analyst	Analyzed	Qualifier
16D1245-03 MW-92-2			Matrix: Water		Collected: 04/27/06 16:50	
<i>Determination of Volatile Organic Compounds</i>						
Surrogate: Dibromofluoromethane	104 %		67-135	TVK	05/03/06	0:08
Surrogate: 1,2-Dichloroethane-d4	107 %		73-126	TVK	05/03/06	0:08
Surrogate: Toluene-d8	99.8 %		80-117	TVK	05/03/06	0:08
Surrogate: 4-Bromofluorobenzene	91.3 %		74-125	TVK	05/03/06	0:08
<i>Determination of Conventional Chemistry Parameters</i>						
Chemical Oxygen Demand	<10 mg/l	10	EPA 410.4	SAA	05/01/06	14:25
Chloride	46 mg/l	10	EPA 9252	RVV	05/01/06	16:56
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	05/01/06	14:51
<i>Determination of Dissolved Metals</i>						
Iron, dissolved	<0.030 mg/l	0.030	EPA 6010B	LAR	05/03/06	8:50
16D1245-04 MW-92-3			Matrix: Water		Collected: 04/27/06 14:10	
<i>Determination of Volatile Organic Compounds</i>						
Trichloroethylene	0.3 ug/l	0.3	EPA 8260B	TVK	05/03/06	9:30
Surrogate: Dibromofluoromethane	103 %		67-135	TVK	05/03/06	9:30
Surrogate: 1,2-Dichloroethane-d4	106 %		73-126	TVK	05/03/06	9:30
Surrogate: Toluene-d8	99.0 %		80-117	TVK	05/03/06	9:30
Surrogate: 4-Bromofluorobenzene	90.4 %		74-125	TVK	05/03/06	9:30
<i>Determination of Conventional Chemistry Parameters</i>						
Chemical Oxygen Demand	<10 mg/l	10	EPA 410.4	SAA	05/01/06	14:25
Chloride	49 mg/l	10	EPA 9252	RVV	05/01/06	16:56
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	05/01/06	14:51
<i>Determination of Dissolved Metals</i>						
Iron, dissolved	<0.030 mg/l	0.030	EPA 6010B	LAR	05/03/06	8:54
16D1245-05 MW-92-4			Matrix: Water		Collected: 04/27/06 11:15	
<i>Determination of Volatile Organic Compounds</i>						
Trichloroethylene	<0.3 ug/l	0.3	EPA 8260B	TVK	05/03/06	1:35
Surrogate: Dibromofluoromethane	108 %		67-135	TVK	05/03/06	1:35
Surrogate: 1,2-Dichloroethane-d4	108 %		73-126	TVK	05/03/06	1:35
Surrogate: Toluene-d8	98.5 %		80-117	TVK	05/03/06	1:35
Surrogate: 4-Bromofluorobenzene	88.8 %		74-125	TVK	05/03/06	1:35
<i>Determination of Conventional Chemistry Parameters</i>						
Chemical Oxygen Demand	<10 mg/l	10	EPA 410.4	SAA	05/01/06	14:25
Chloride	84 mg/l	10	EPA 9252	RVV	05/01/06	16:56
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	05/01/06	14:51
<i>Determination of Dissolved Metals</i>						

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Work Order: 16D1245

Analyte	Result	MRL	Method	Analyst	Analyzed	Qualifier
16D1245-05 MW-92-4			Matrix: Water		Collected:	04/27/06 11:15
<i>Determination of Dissolved Metals</i>						
Iron, dissolved						
	<0.030 mg/l	0.030	EPA 6010B	LAR	05/03/06	8:59
16D1245-06 MW-92-5			Matrix: Water		Collected:	04/27/06 11:55
<i>Determination of Volatile Organic Compounds</i>						
Trichloroethylene	<0.3 ug/l	0.3	EPA 8260B	TVK	05/03/06	2:18
Surrogate: Dibromofluoromethane	105 %		67-135	TVK	05/03/06	2:18
Surrogate: 1,2-Dichloroethane-d4	108 %		73-126	TVK	05/03/06	2:18
Surrogate: Toluene-d8	99.5 %		80-117	TVK	05/03/06	2:18
Surrogate: 4-Bromofluorobenzene	87.6 %		74-125	TVK	05/03/06	2:18
<i>Determination of Conventional Chemistry Parameters</i>						
Chemical Oxygen Demand	<10 mg/l	10	EPA 410.4	SAA	05/01/06	14:25
Chloride	57 mg/l	10	EPA 9252	RVV	05/01/06	16:56
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	05/01/06	14:51
<i>Determination of Dissolved Metals</i>						
Iron, dissolved	0.049 mg/l	0.030	EPA 6010B	LAR	05/03/06	9:03
16D1245-07 MW-92-6			Matrix: Water		Collected:	04/27/06 09:25
<i>Determination of Volatile Organic Compounds</i>						
Trichloroethylene	<0.3 ug/l	0.3	EPA 8260B	TVK	05/03/06	3:03
Surrogate: Dibromofluoromethane	107 %		67-135	TVK	05/03/06	3:03
Surrogate: 1,2-Dichloroethane-d4	109 %		73-126	TVK	05/03/06	3:03
Surrogate: Toluene-d8	99.5 %		80-117	TVK	05/03/06	3:03
Surrogate: 4-Bromofluorobenzene	90.7 %		74-125	TVK	05/03/06	3:03
<i>Determination of Conventional Chemistry Parameters</i>						
Chemical Oxygen Demand	<10 mg/l	10	EPA 410.4	SAA	05/01/06	14:25
Chloride	120 mg/l	10	EPA 9252	RVV	05/01/06	16:56
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	05/01/06	14:51
<i>Determination of Dissolved Metals</i>						
Iron, dissolved	0.429 mg/l	0.030	EPA 6010B	LAR	05/03/06	9:16
16D1245-08 MW-92-7			Matrix: Water		Collected:	04/27/06 10:00
<i>Determination of Volatile Organic Compounds</i>						
Trichloroethylene	<0.3 ug/l	0.3	EPA 8260B	TVK	05/03/06	3:47
Surrogate: Dibromofluoromethane	108 %		67-135	TVK	05/03/06	3:47
Surrogate: 1,2-Dichloroethane-d4	111 %		73-126	TVK	05/03/06	3:47
Surrogate: Toluene-d8	99.6 %		80-117	TVK	05/03/06	3:47
Surrogate: 4-Bromofluorobenzene	91.1 %		74-125	TVK	05/03/06	3:47

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Work Order: 16D1245

Analyte	Result	MRL	Method	Analyst	Analyzed	Qualifier
16D1245-08 MW-92-7			Matrix: Water		Collected:	04/27/06 10:00
<i>Determination of Conventional Chemistry Parameters</i>						
Chemical Oxygen Demand	<10 mg/l	10	EPA 410.4	SAA	05/01/06	14:25
Chloride	58 mg/l	10	EPA 9252	RVV	05/01/06	16:56
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	05/01/06	14:51
<i>Determination of Dissolved Metals</i>						
Iron, dissolved	6.51 mg/l	0.030	EPA 6010B	LAR	05/03/06	9:20
16D1245-09 SW-1			Matrix: Water		Collected:	04/27/06 15:40
<i>Determination of Volatile Organic Compounds</i>						
Trichloroethylene	<0.3 ug/l	0.3	EPA 8260B	TVK	05/03/06	4:32
Surrogate: Dibromofluoromethane	107 %		67-135	TVK	05/03/06	4:32
Surrogate: 1,2-Dichloroethane-d4	106 %		73-126	TVK	05/03/06	4:32
Surrogate: Toluene-d8	98.9 %		80-117	TVK	05/03/06	4:32
Surrogate: 4-Bromofluorobenzene	90.1 %		74-125	TVK	05/03/06	4:32
<i>Determination of Conventional Chemistry Parameters</i>						
Chemical Oxygen Demand	10 mg/l	10	EPA 410.4	SAA	05/01/06	14:25
Chloride	81 mg/l	10	EPA 9252	RVV	05/01/06	16:59
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	05/01/06	14:51
<i>Determination of Dissolved Metals</i>						
Iron, dissolved	0.083 mg/l	0.030	EPA 6010B	LAR	05/03/06	9:24
16D1245-10 Duplicate			Matrix: Water		Collected:	04/27/06 00:00
<i>Determination of Volatile Organic Compounds</i>						
Trichloroethylene	0.3 ug/l	0.3	EPA 8260B	TVK	05/03/06	5:16
Surrogate: Dibromofluoromethane	111 %		67-135	TVK	05/03/06	5:16
Surrogate: 1,2-Dichloroethane-d4	116 %		73-126	TVK	05/03/06	5:16
Surrogate: Toluene-d8	99.6 %		80-117	TVK	05/03/06	5:16
Surrogate: 4-Bromofluorobenzene	89.1 %		74-125	TVK	05/03/06	5:16
<i>Determination of Conventional Chemistry Parameters</i>						
Chemical Oxygen Demand	<10 mg/l	10	EPA 410.4	SAA	05/01/06	14:25
Chloride	48 mg/l	10	EPA 9252	RVV	05/01/06	16:59
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	05/01/06	14:51
<i>Determination of Dissolved Metals</i>						
Iron, dissolved	<0.030 mg/l	0.030	EPA 6010B	LAR	05/03/06	9:28

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Work Order: 16D1245

End of Report



Keystone Laboratories, Inc.
Jeffrey King, Ph.D.
Laboratory Director

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CHAIN OF CUSTODY RECORD

Keystone
LABORATORIES, INC.

600 E. 17th St. S.
Newton, IA 50208
Phone: 641-792-8451
Fax: 641-792-7989

3012 Ansborough Ave.
Waterloo, IA 50701
Phone: 319-235-4440
Fax: 319-235-2480
www.keystonelabs.com

1304 Adams
Kansas City, KS 66103
Phone: 913-321-7856
Fax: 913-321-7937

PAGE 1 OF 1

PRINT OR TYPE INFORMATION BELOW

SAMPLER: Wayne Shannon

SITE NAME: Concrete Supply

ADDRESS: E. 30th & May

CITY/ST/ZIP: Des Moines, IA

PHONE: _____

REPORT TO:

NAME: Chandra Shekar

COMPANY NAME: Shekar Engineering

ADDRESS: PO Box 3625

CITY/ST/ZIP: Des Moines, IA

PHONE: 334-5062

FAX: _____

BILL TO:

NAME: Same

COMPANY NAME: _____

ADDRESS: _____

CITY/ST/ZIP: _____

PHONE: _____

Keystone Quote No.:

(If Applicable)

CLIENT SAMPLE NUMBER	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	MATRIX	GRAB/COMPOSITE	ANALYSES REQUIRED					LAB USE ONLY	
							Landfill F	Trichloroethylene				LABORATORY WORK ORDER NO.	LABORATORY SAMPLE NUMBER
MW-92-1	27 Apr	17:30		6	H ₂ O	G	X	X				16D1245	01
MW-92-1 R		15:00		1									02
MW-92-2		16:50		1									03
MW-92-3		14:10											04
MW-92-4		11:15											05
MW-92-5		11:55											06
MW-92-6		9:25											07
MW-92-7		10:00											08
MW-1		15:40											09
Duplicate	✓	—			✓	✓	✓	✓					10

Relinquished by: (Signature) <i>wayne shannon</i>	Date Time	Received by: (Signature)	Date Time	Turn Around: <input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Rush	Contact Lab Prior to Submission
Relinquished by: (Signature)	Date Time	Received for Lab by: (Signature) <i>bill</i>	Date Time 4/28/04 11:15 AM	Remarks: <i>5 day Turn</i>		

Accreditations:
Iowa DNR: 095
New Jersey DEP: IA001
Kansas DHE: E-10287

ANALYTICAL REPORT

October 31, 2006

Work Order: 16J0933

Page 1 of 5

Report To
Chandra Shekar Shekar Engineering 8938 Highland Oaks Drive Johnston, IA 50131

Work Order Information
Date Received: 10/20/2006 10:15AM Collector: Shannon, Wayne Phone: 515-334-5062 PO Number:

Project: Concrete Supply Landfill
Project Number: [none]

Analyte	Result	MRL	Method	Analyst	Analyzed	Qualifier
16J0933-01 SW-1			Matrix: Water		Collected: 10/19/06 14:10	
<i>Determination of Volatile Organic Compounds</i>						
Trichloroethylene	<1.0 ug/l	1.0	EPA 8260B	TVK	10/24/06 14:40	
Surrogate: Dibromofluoromethane	97.4 %		67-135	TVK	10/24/06 14:40	
Surrogate: 1,2-Dichloroethane-d4	93.8 %		73-126	TVK	10/24/06 14:40	
Surrogate: Toluene-d8	97.6 %		80-117	TVK	10/24/06 14:40	
Surrogate: 4-Bromofluorobenzene	97.2 %		74-125	TVK	10/24/06 14:40	
<i>Determination of Conventional Chemistry Parameters</i>						
Total Organic Halogens (TOX)	0.015 mg/l	0.010	EPA 9020	RSW	10/26/06 0:00	
Chemical Oxygen Demand	33 mg/l	10	EPA 410.4RVV		10/23/06 11:18	
Chloride	68 mg/l	10	EPA 9252	RFM	10/20/06 14:12	
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	10/24/06 13:58	
Phenols, total	<0.100 mg/l	0.100	EPA 9065	RFM	10/23/06 12:24	
<i>Determination of Dissolved Metals</i>						
Iron, dissolved	0.378 mg/l	0.030	EPA 6010B	LAR	10/25/06 11:40	
16J0933-02 MW-92-1			Matrix: Water		Collected: 10/19/06 16:20	
<i>Determination of Volatile Organic Compounds</i>						
Trichloroethylene	5.8 ug/l	1.0	EPA 8260B	TVK	10/24/06 15:19	
Surrogate: Dibromofluoromethane	100 %		67-135	TVK	10/24/06 15:19	
Surrogate: 1,2-Dichloroethane-d4	98.8 %		73-126	TVK	10/24/06 15:19	
Surrogate: Toluene-d8	96.4 %		80-117	TVK	10/24/06 15:19	
Surrogate: 4-Bromofluorobenzene	98.0 %		74-125	TVK	10/24/06 15:19	
<i>Determination of Conventional Chemistry Parameters</i>						
Total Organic Halogens (TOX)	0.045 mg/l	0.010	EPA 9020	RSW	10/26/06 0:00	
Chemical Oxygen Demand	<10 mg/l	10	EPA 410.4	RVV	10/23/06 11:18	
Chloride	59 mg/l	10	EPA 9252	RFM	10/20/06 14:12	
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	10/24/06 13:58	
Phenols, total	<0.100 mg/l	0.100	EPA 9065	RFM	10/23/06 12:24	
<i>Determination of Dissolved Metals</i>						
Iron, dissolved	<0.030 mg/l	0.030	EPA 6010B	LAR	10/25/06 11:44	

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Work Order: 16J0933

Analyte	Result	MRL	Method	Analyst	Analyzed	Qualifier
16J0933-02	MW-92-1		Matrix:Water		Collected: 10/19/06 16:20	
16J0933-03	MW-92-2		Matrix:Water		Collected: 10/19/06 15:30	
<i>Determination of Volatile Organic Compounds</i>						
Trichloroethylene	6.3 ug/l	1.0	EPA 8260B	TVK	10/26/06 1:30	
Surrogate: Dibromofluoromethane	103 %		67-135	TVK	10/26/06 1:30	
Surrogate: 1,2-Dichloroethane-d4	100 %		73-126	TVK	10/26/06 1:30	
Surrogate: Toluene-d8	97.8 %		80-117	TVK	10/26/06 1:30	
Surrogate: 4-Bromofluorobenzene	94.8 %		74-125	TVK	10/26/06 1:30	
<i>Determination of Conventional Chemistry Parameters</i>						
Total Organic Halogens (TOX)	0.040 mg/l	0.010	EPA 9020	RSW	10/26/06 0:00	
Chemical Oxygen Demand	10 mg/l	10	EPA 410.4RVV		10/23/06 11:18	
Chloride	48 mg/l	10	EPA 9252	RFM	10/20/06 14:12	
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	10/24/06 13:58	
Phenols, total	<0.100 mg/l	0.100	EPA 9065	RFM	10/23/06 12:24	
<i>Determination of Dissolved Metals</i>						
Iron, dissolved	<0.030 mg/l	0.030	EPA 6010B	LAR	10/25/06 11:48	
16J0933-04	MW-92-3		Matrix:Water		Collected: 10/19/06 12:25	
<i>Determination of Volatile Organic Compounds</i>						
Trichloroethylene	<1.0 ug/l	1.0	EPA 8260B	TVK	10/24/06 17:17	
Surrogate: Dibromofluoromethane	102 %		67-135	TVK	10/24/06 17:17	
Surrogate: 1,2-Dichloroethane-d4	102 %		73-126	TVK	10/24/06 17:17	
Surrogate: Toluene-d8	96.4 %		80-117	TVK	10/24/06 17:17	
Surrogate: 4-Bromofluorobenzene	96.8 %		74-125	TVK	10/24/06 17:17	
<i>Determination of Conventional Chemistry Parameters</i>						
Total Organic Halogens (TOX)	0.014 mg/l	0.010	EPA 9020	RSW	10/26/06 0:00	
Chemical Oxygen Demand	<10 mg/l	10	EPA 410.4	RVV	10/23/06 11:18	
Chloride	20 mg/l	10	EPA 9252	RFM	10/20/06 14:12	
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	10/24/06 13:58	
Phenols, total	<0.100 mg/l	0.100	EPA 9065	RFM	10/23/06 12:24	
<i>Determination of Dissolved Metals</i>						
Iron, dissolved	0.055 mg/l	0.030	EPA 6010B	LAR	10/25/06 11:52	
16J0933-05	MW-92-4		Matrix:Water		Collected: 10/19/06 11:45	
<i>Determination of Volatile Organic Compounds</i>						
Trichloroethylene	<1.0 ug/l	1.0	EPA 8260B	TVK	10/24/06 17:55	
Surrogate: Dibromofluoromethane	101 %		67-135	TVK	10/24/06 17:55	
Surrogate: 1,2-Dichloroethane-d4	100 %		73-126	TVK	10/24/06 17:55	
Surrogate: Toluene-d8	95.8 %		80-117	TVK	10/24/06 17:55	

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Work Order: 16J0933

Analyte	Result	MRL	Method	Analyst	Analyzed	Qualifier
16J0933-05 MW-92-4			Matrix:Water		Collected: 10/19/06 11:45	
<i>Determination of Volatile Organic Compounds</i>						
Surrogate: 4-Bromofluorobenzene	98.8 %		74-125	TVK	10/24/06 17:55	
<i>Determination of Conventional Chemistry Parameters</i>						
Total Organic Halogens (TOX)	0.047 mg/l	0.010	EPA 9020	RSW	10/26/06 0:00	
Chemical Oxygen Demand	<10 mg/l	10	EPA 410.4	RVV	10/23/06 11:18	
Chloride	117 mg/l	10	EPA 9252	RFM	10/20/06 14:12	
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	10/24/06 13:58	
Phenols, total	<0.100 mg/l	0.100	EPA 9065	RFM	10/23/06 12:24	
<i>Determination of Dissolved Metals</i>						
Iron, dissolved	<0.030 mg/l	0.030	EPA 6010B	LAR	10/25/06 11:57	
16J0933-06 MW-92-5			Matrix:Water		Collected: 10/19/06 10:50	
<i>Determination of Volatile Organic Compounds</i>						
Trichloroethylene	<1.0 ug/l	1.0	EPA 8260B	TVK	10/24/06 18:33	
Surrogate: Dibromofluoromethane	103 %		67-135	TVK	10/24/06 18:33	
Surrogate: 1,2-Dichloroethane-d4	102 %		73-126	TVK	10/24/06 18:33	
Surrogate: Toluene-d8	97.2 %		80-117	TVK	10/24/06 18:33	
Surrogate: 4-Bromofluorobenzene	96.4 %		74-125	TVK	10/24/06 18:33	
<i>Determination of Conventional Chemistry Parameters</i>						
Total Organic Halogens (TOX)	0.019 mg/l	0.010	EPA 9020	RSW	10/26/06 0:00	
Chemical Oxygen Demand	<10 mg/l	10	EPA 410.4	RVV	10/23/06 11:18	
Chloride	56 mg/l	10	EPA 9252	RFM	10/20/06 14:12	
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	10/24/06 13:58	
Phenols, total	<0.100 mg/l	0.100	EPA 9065	RFM	10/23/06 12:24	
<i>Determination of Dissolved Metals</i>						
Iron, dissolved	<0.030 mg/l	0.030	EPA 6010B	LAR	10/25/06 12:01	
16J0933-07 MW-92-6			Matrix:Water		Collected: 10/19/06 09:40	
<i>Determination of Volatile Organic Compounds</i>						
Trichloroethylene	<1.0 ug/l	1.0	EPA 8260B	TVK	10/24/06 19:12	
Surrogate: Dibromofluoromethane	101 %		67-135	TVK	10/24/06 19:12	
Surrogate: 1,2-Dichloroethane-d4	103 %		73-126	TVK	10/24/06 19:12	
Surrogate: Toluene-d8	98.0 %		80-117	TVK	10/24/06 19:12	
Surrogate: 4-Bromofluorobenzene	97.4 %		74-125	TVK	10/24/06 19:12	
<i>Determination of Conventional Chemistry Parameters</i>						
Total Organic Halogens (TOX)	0.031 mg/l	0.010	EPA 9020	RSW	10/26/06 0:00	
Chemical Oxygen Demand	18 mg/l	10	EPA 410.4RVV	RVV	10/23/06 11:18	
Chloride	119 mg/l	10	EPA 9252	RFM	10/20/06 14:12	

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Shekar Engineering
8938 Highland Oaks Drive
Johnston, IA 50131

October 31, 2006

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Work Order: 16J0933

Analyte	Result	MRL	Method	Analyst	Analyzed	Qualifier
16J0933-07 MW-92-6			Matrix:Water		Collected:	10/19/06 09:40
<i>Determination of Conventional Chemistry Parameters</i>						
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	10/24/06 13:58	
Phenols, total	<0.100 mg/l	0.100	EPA 9065	RFM	10/23/06 12:24	
<i>Determination of Dissolved Metals</i>						
Iron, dissolved	0.135 mg/l	0.030	EPA 6010B	LAR	10/25/06 12:13	
16J0933-08 MW-92-7			Matrix:Water		Collected:	10/19/06 08:50
<i>Determination of Volatile Organic Compounds</i>						
Trichloroethylene	<1.0 ug/l	1.0	EPA 8260B	TVK	10/24/06 19:50	
Surrogate: Dibromofluoromethane	102 %		67-135	TVK	10/24/06 19:50	
Surrogate: 1,2-Dichloroethane-d4	102 %		73-126	TVK	10/24/06 19:50	
Surrogate: Toluene-d8	99.2 %		80-117	TVK	10/24/06 19:50	
Surrogate: 4-Bromofluorobenzene	96.0 %		74-125	TVK	10/24/06 19:50	
<i>Determination of Conventional Chemistry Parameters</i>						
Total Organic Halogens (TOX)	0.019 mg/l	0.010	EPA 9020	RSW	10/26/06 0:00	
Chemical Oxygen Demand	17 mg/l	10	EPA 410.4RVV		10/23/06 11:18	
Chloride	56 mg/l	10	EPA 9252	RFM	10/20/06 14:12	
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	10/24/06 13:58	
Phenols, total	<0.100 mg/l	0.100	EPA 9065	RFM	10/23/06 12:24	
<i>Determination of Dissolved Metals</i>						
Iron, dissolved	6.54 mg/l	0.030	EPA 6010B	LAR	10/25/06 12:18	
16J0933-09 MW-92-1R			Matrix:Water		Collected:	10/19/06 13:15
<i>Determination of Volatile Organic Compounds</i>						
Trichloroethylene	<1.0 ug/l	1.0	EPA 8260B	TVK	10/24/06 20:28	
Surrogate: Dibromofluoromethane	103 %		67-135	TVK	10/24/06 20:28	
Surrogate: 1,2-Dichloroethane-d4	105 %		73-126	TVK	10/24/06 20:28	
Surrogate: Toluene-d8	97.4 %		80-117	TVK	10/24/06 20:28	
Surrogate: 4-Bromofluorobenzene	97.6 %		74-125	TVK	10/24/06 20:28	
<i>Determination of Conventional Chemistry Parameters</i>						
Total Organic Halogens (TOX)	0.038 mg/l	0.010	EPA 9020	RSW	10/26/06 0:00	
Chemical Oxygen Demand	14 mg/l	10	EPA 410.4RVV		10/23/06 11:18	
Chloride	103 mg/l	10	EPA 9252	RFM	10/20/06 14:12	
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	10/24/06 13:58	
Phenols, total	<0.100 mg/l	0.100	EPA 9065	RFM	10/23/06 12:24	
<i>Determination of Dissolved Metals</i>						
Iron, dissolved	<0.030 mg/l	0.030	EPA 6010B	LAR	10/25/06 12:22	

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October 31, 2006

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Work Order: 16J0933

Analyte	Result	MRL	Method	Analyst	Analyzed	Qualifier
16J0933-10 Duplicate			Matrix: Water		Collected:	10/19/06 00:00
<i>Determination of Volatile Organic Compounds</i>						
Trichloroethylene	<1.0 ug/l	1.0	EPA 8260B	TVK	10/26/06	2:08
Surrogate: Dibromofluoromethane	104 %		67-135	TVK	10/26/06	2:08
Surrogate: 1,2-Dichloroethane-d4	105 %		73-126	TVK	10/26/06	2:08
Surrogate: Toluene-d8	100 %		80-117	TVK	10/26/06	2:08
Surrogate: 4-Bromofluorobenzene	94.4 %		74-125	TVK	10/26/06	2:08
<i>Determination of Conventional Chemistry Parameters</i>						
Total Organic Halogens (TOX)	0.034 mg/l	0.010	EPA 9020	RSW	10/26/06	0:00
Chemical Oxygen Demand	11 mg/l	10	EPA 410.4RVV		10/23/06	11:18
Chloride	100 mg/l	10	EPA 9252	RFM	10/20/06	14:12
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	10/24/06	13:58
Phenols, total	<0.100 mg/l	0.100	EPA 9065	RFM	10/23/06	12:24
<i>Determination of Dissolved Metals</i>						
Iron, dissolved	<0.030 mg/l	0.030	EPA 6010B	LAR	10/25/06	12:26

End of Report

Keystone Laboratories, Inc.
Jeffrey King, Ph.D.
Laboratory Director

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MRL = Method Reporting Limit.

CHAIN OF CUSTODY RECORD



600 E. 17th St. S.
Newton, IA 50208
Phone: 641-792-8451
Fax: 641-792-7989

3012 Ansborough Ave.
Waterloo, IA 50701
Phone: 319-235-4440
Fax: 319-235-2480
www.keystonelabs.com

1155 Adams, Suite 120
Kansas City, KS 66103
Phone: 913-321-7856
Fax: 913-321-7937

PAGE 1 OF _____

PRINT OR TYPE INFORMATION BELOW:

SAMPLER: Wayne Shannon

SITE NAME: Concrete Supply Const. Site

ADDRESS: 1180 SE 30th St.

CITY/ST/ZIP: Des Moines

PHONE: _____

REPORT TO:

NAME: Chandra Shekar

COMPANY NAME: Shekar Engineering

ADDRESS: P.O. Box 3625

CITY/ST/ZIP: Des Moines

PHONE: 334-5262

FAX: _____

BILL TO:

NAME: Same

COMPANY NAME: _____

ADDRESS: _____

CITY/ST/ZIP: _____

PHONE: _____

Keystone Quote No.: _____

(If Applicable)

CLIENT SAMPLE NUMBER	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	MATRIX	GRAB/COMPOSITE	ANALYSES REQUIRED				LAB USE ONLY	
							Liquid/F.1	E	Liquid/F.1	F	Trichloroethane	LABORATORY WORK ORDER NO.
SCU-1	19 Oct	14:10		3	H ₂ O	G	X	X	X			1050933
MW-92-1		16:20		1								02
MW-92-2		15:30		1								03
MW-92-3		12:25		1								04
MW-92-4		11:45		1								05
MW-92-5		10:58		1								06
MW-92-6		9:40		1								07
MW-92-7	8:50			1								08
MW-92-1R	13:15			1								09
Duplicate	—			1			↓	↓	↓	↓	↓	10

Relinquished by: (Signature)

Date 20 Oct

Time

Received by: (Signature)

Date

Time

Turn-Around:

Standard

Rush

5 days
Contact Lab Prior to Submission

Relinquished by: (Signature)

Date

Time

Received for Lab by: (Signature)

Date

Time

Remarks: